

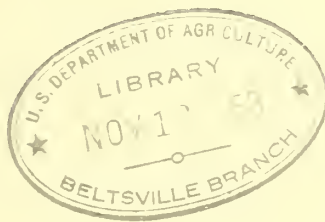
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AGRICULTURE OF THE NETHERLANDS INDIES

By W. Ladejinsky*

The Netherlands Indies, located in the equatorial region of southeastern Asia, is the Netherlands' most important colonial possession and one of the world's largest and richest colonial empires. The main source of its wealth lies in the exportation of such tropical products as rubber, sugar, tea, coffee, cinchona, and tobacco, and of such mineral products as oil and tin.

The economic development of the Islands furnishes an outstanding example of productive colonial administration. Direct and indirect returns to the Dutch on their investment in the country amounted to about 160 million dollars a year before the depression. The natives have also benefited from the Dutch administration, which has prevented encroachment on their land holdings and encouraged them to participate in the economic expansion of their country through increased production of export crops

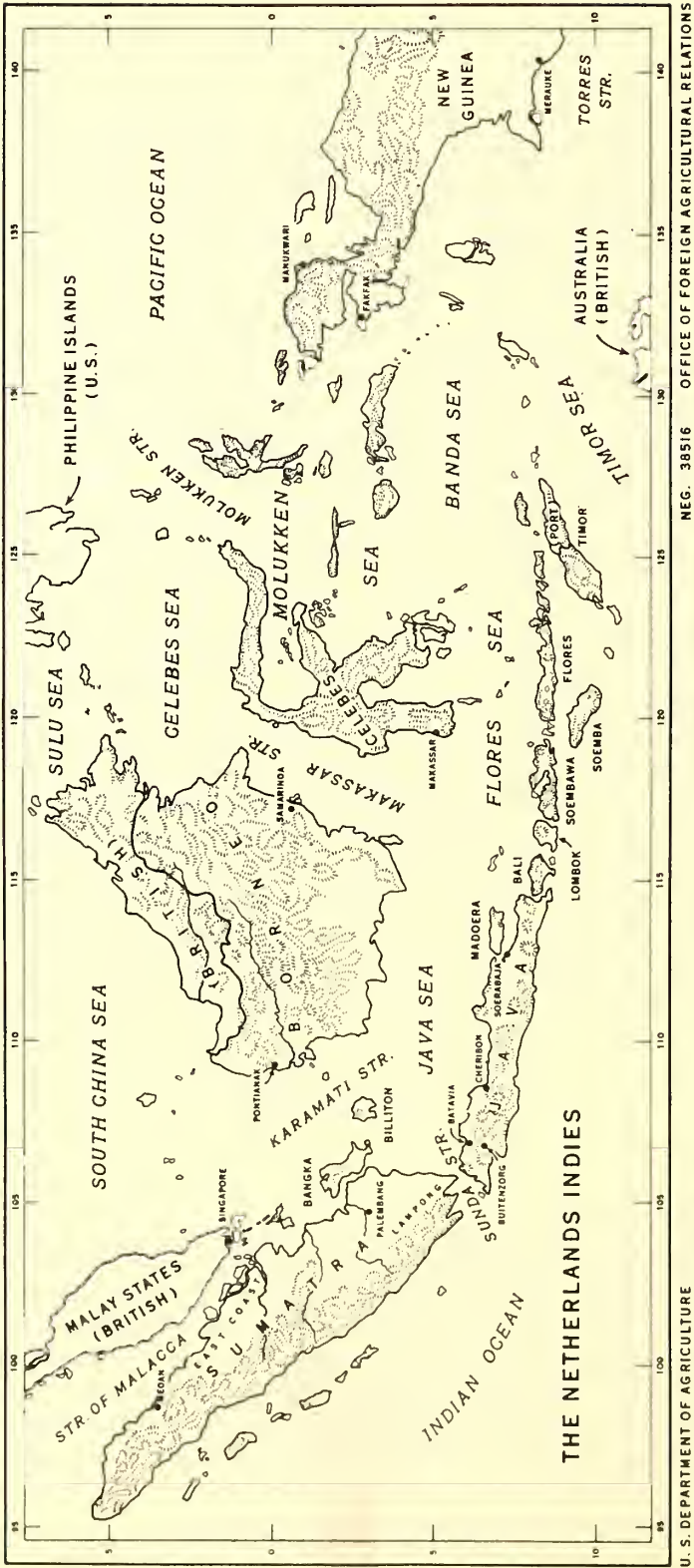
Until recently the economic policy of the Netherlands Indies - of which free trade was the principal element - has been that of exporting raw materials and importing finished products. The continued prosperity of the Islands over a long period of years has been due to the high quality and relatively low price of their products. During the depression of the 1930's the export market declined so sharply that in order to prevent economic collapse the government was obliged to discard the 60-year-old policy of unhampered economic development and to inaugurate one of extreme protectionism and government intervention, with the object of achieving greater economic self-sufficiency of the Islands and lessening their dependence on the world export market.

PHYSICAL BACKGROUND

GEOGRAPHIC POSITION

The Netherlands Indies consists of a number of islands situated between 95° and 141° east longitude and 6° north and 11° south latitude. On the one hand the islands separate the Pacific from the Indian Ocean, while on the other they link Asia with Australia. The islands fall into three groups: The Greater Sunda Islands, made up of Java and Madoera, Sumatra, Borneo, and Celebes; the Lesser Sunda Islands, consisting of Bali, Lombok, Soembawa, Flores, Timor, Soemba, Roti, and several minor islands; and the Molukken (Spice) Islands and Netherland New Guinea. The maximum length from west to east is about 3,000 miles and from north to south 1,200 miles.

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Figure 1.-Map of the Netherlands Indies.

With the exception of the eastern part of Timor, which belongs to Portugal, and of northern Borneo and eastern New Guinea, which are British protectorates, the entire group of islands belongs to the Netherlands. These rich and extended possessions place the Netherlands among the world's most important colonial powers.

The Netherlands Indies is bounded on the north by the Straits of Malacca, the South China Sea (to the south of the Philippines), the Celebes Sea, and the Pacific Ocean; on the east by the Pacific Ocean and British New Guinea; and on the south and west by the Indian Ocean. It may be noted that in close proximity to the Archipelago lies the British possession of the Malay Peninsula, with Singapore as its southernmost point. Not far distant to the northwest are the Philippine Islands.

By virtue of its geographic position the Netherlands Indies commands important trade routes, constituting the southwestern entrance to the all-important ocean highway of the Pacific. The northeastern coast of the island of Sumatra is located on the Straits of Malacca, through which must pass all ships proceeding to or returning from the Far East. The harbor of Singapore, one of the strongest naval bases in the world, is situated at the eastern entrance to these straits, and is a port of call for nearly all ships plying in Far Eastern waters. In addition, most of the sea traffic from Singapore to Australia passes through Netherlands Indies waters. Considering also that the trade routes traversing the Archipelago connect eastern Asia with Africa and even Europe, the geographic and economic importance of the Indies becomes even more significant. In the light of these observations it is appropriate to add that "Even if the islands [Netherlands Indies] themselves had no geo-political importance, if they were merely sandy wastes, even then the maritime routes in their vicinity would attract the greatest interest in the field of international politics."¹

AREA AND CHARACTERISTIC FEATURES

The total area of the Netherlands Indies is estimated at 735,000 square miles, which is about 55 times the size of the Netherlands and approximately one-quarter of the area of continental United States.

Java is about equal in size to the State of New York. Although smaller than some other islands that constitute the Archipelago, it is the most important of them all, and is intensively cultivated everywhere from sea level up to about 4,000 or more feet. The surface not covered by irrigated rice fields is used for numerous other crops, such as nonirrigated rice, corn, cassava, sugarcane, coconut palms, fruit trees, tea, coffee, rubber, and tobacco. Java, as one authority has expressed it, "is the Denmark of the tropics, but with this difference, that while it is predominantly agricultural its agriculture is more varied than that of any other country in the world."²

¹ Kist, F. J. "The Geo-Political and Strategic Importance of the Waterways in the Netherlands Indies," *Bul. Colonial Inst. Amsterdam*, Aug. 1938 pp. 255-256.

² Ormsby Gore, W. G. A., *Report on his visit to Malaya, Ceylon and Java during the year 1928*, London, 1928, p. 111.

TABLE 1.—Area and population of the Netherlands Indies, 1930

ISLAND	AREA	POPULATION		
		TOTAL	PERCENTAGE OF TOTAL	DENSITY PER SQUARE MILE
	: Square miles:	: Numbers :	: Percent :	: Numbers
Java and Madoera	51,000	: 41,718,000 :	68.7	: 818
Sumatra	183,000	: 8,254,000 :	13.6	: 45
Dutch Borneo	208,000	: 2,168,000 :	3.6	: 10
Celebes and adjacent islands ...	39,000	: 3,093,000 :	5.0	: 79
Dutch New Guinea and Molukkens ..	192,000	: 893,000 :	1.5	: 5
Timor and adjacent islands	24,000	: 1,657,000 :	2.7	: 69
Bali and Lombok	4,000	: 1,803,000 :	3.0	: 450
Others	34,000	: 1,139,000 :	1.9	: 33
Total	735,000	: 60,725,000 :	100.0	: ¹ 82
	:	:	:	:

¹ Average density.

Indisch Verslag, 1937.

Sumatra, second in importance only to Java, is as large as California and larger than Great Britain. Borneo, the largest of all the islands, equal in size to France, is a sparsely populated, thickly wooded island. Because of the slight downward slope of the rivers, the plains are inundated over a considerable area in the rainy season. Ground suitable for rice cultivation is found only in the interior. The Dutch section of New Guinea is as large as Japan proper.

These islands, as well as all others of the Netherlands Indies, are not so extensively cultivated as is Java. However, certain sections of the large, low-lying plain on the east coast of Sumatra may well serve as a model of large-scale tropical agriculture. Here in 1863 were initiated the first experiments in this important branch of agriculture, with the production of plantation tobacco - the product of which, as Deli-tobacco, enjoys a world-wide reputation. Since that time the cultivation of other staple products has been encouraged, and at present rubber and tea plantations, as well as the production of coconut palms, fibers, and coffee, are of increasing importance. In addition, some areas are rich in such resources as oil and tin. Much of the low area of Sumatra, Borneo, and New Guinea, however, consists of marshes covered with swamp forests. In most cases the upland sections of these islands are also not productive.

TOPOGRAPHY, SOIL, AND CLIMATE

Because of its size, the Netherlands Indies is characterized by a great diversity of topography and a wide range of climate. There are, however, certain physical features characteristic of the Archipelago as a whole. Thus, the principal islands are traversed by a central mountain range, which divides the hill districts from more or less extensive lowlands and coastal plains. The western and especially the

southern islands are among the most volcanic territories of the world. This is the most important factor affecting the fertility of soil in the Netherlands Indies, and, in turn, its agricultural development.

The soils of Java, varied in quality, may be divided into three groups: those of volcanic origin, usually fertile and of good texture; those of the alluvial plains, fertile but rather heavy; and those of tertiary origin, poor and heavy. The land has long been under continuous cultivation, and in many cases no longer offers the same advantages as newly reclaimed areas. High yields are impossible without previous heavy application of natural or artificial fertilizers. On the whole, however, most of the soils of Java and of some sections of Bali, Celebes, Sumatra, and certain other islands are very fertile, chiefly because of the great quantities of volcanic ash that have overlaid land of tertiary origin. Under the influence of the warm, damp climate the volcanic material disintegrates and brings about a *de novo* rejuvenation of the soil.

In some sections of Sumatra relatively recent volcanic action has improved the soil to such an extent that it is as rich as that of Java; but on the whole Sumatra is in a less favorable position because "... vast areas in Sumatra are entirely outside the range of volcanic influence."³ The soil of a large part of the island of Celebes is of the same poor quality as that of the greater part of Sumatra, except for the fertile volcanic areas of the northeast and southwest. Borneo and the Dutch section of New Guinea are entirely devoid of volcanoes, with the result that "Nowhere is the soil of such a character that it could be used without previous special preparation to grow food crops for a number of consecutive years . . . only crops that furnish highly valuable products can be made to pay, and even then there comes a time when previously effective measures prove vain."⁴

The Netherlands Indies is located in the tropical zone; its climate, therefore, is characterized by high temperatures, abundant rainfall, and great humidity. Since the entire land area is within 760 miles of the equator, temperature is fairly uniform during the whole year. In Batavia, for instance, the temperature during July and August averages 78.4° F., as against 77.5° in January and February. The yearly average at most sea level points is about 79° F. Cool areas are limited to the mountain districts. Average maximum monthly temperatures at sea level points throughout the islands range between 84° and 90° F., and average minimum temperatures between 72° and 77°. The only variation in the almost uniform climate is caused by rainfall, the volume of which depends mainly on the monsoon winds.

Rainfall in the Netherlands Indies is abundant. There is hardly a section in the Archipelago in which it does not rain for at least 3 or 4 months of the year. Yearly total and seasonal rainfall varies widely, but in most areas precipitation is neither too heavy nor too light for crops. Rainfall becomes more abundant as one proceeds north, as the effect of the Australian desert diminishes. Generally, the rainfall ranges from about 40 to 118 inches; the smallest amount on record is 21

³ Mohr, E. C. J., "Climate and soil in the Netherlands Indies," *Bul. Colonial Inst. Amsterdam*, Aug. 1938, p. 249.

⁴ *Ibid.*, p. 250.

and the largest 269 inches. On the islands of Sumatra, Borneo, and the greater part of West Java and Celebes, the average rainfall amounts to about 80 inches.

THE PEOPLE AND THE LAND

DENSITY OF POPULATION

According to the 1930 census the Netherlands Indies had a total population of 61 million, an average of 82 persons per square mile. This figure does not reflect the real problem of the population density in the Indies; it does not take into account the extremely uneven distribution over the Archipelago. The population of Java and Madoera alone was estimated at 42 million, or two-thirds of the total - an average per square mile of 818 persons. In view of the increase in population since then, the figure may now be about 880. In the typical rice-producing areas along the north coast and the rivers of Java, the density ranges from 1,200 to 1,500 persons per square mile. This density is exceeded only in the Nile delta, where the number per square mile is nearly 1,600. When compared with such countries as Great Britain (561 per square mile), the Netherlands (680), and Japan (469), it appears that Java supports one of the heaviest populations of any country. It should also be noted that the density in Java is largely of a rural character, towns comprising less than 9 percent of the total population.

The sparsely populated Outer Provinces (all islands other than Java and Madoera) where, with a total population of 19 million, the average number per square mile is 27, present a striking contrast to Java. Here too, however, one finds considerable variation in density, ranging from 450 per square mile in Bali and Lombok to 79 in Celebes, 45 in Sumatra, 10 in Borneo, and only 5 per square mile in New Guinea. The limited fertile area of these islands, in contrast to their extensive forests and waste land, is mainly responsible for this scarcity of population.

RACIAL GROUPS AND OCCUPATIONS

The population of the Netherlands Indies is for the most part composed of four racial groups: native, European, Chinese, and Foreign Oriental.⁵ The first group includes 97.4 percent of the total population and consists of a number of races, differing with respect to language and other characteristics.

The colonial character of the Netherlands Indies is evident upon consideration of the remaining 2.6 percent of the population and of the occupational distribution of the entire population. Here, as is the case in all other colonial possessions, the economic position of a given group has no relation to its numerical strength. The Europeans constitute the most important group economically; the Chinese and Arabs have acquired practically exclusive control of activities usually identified with the petty bourgeoisie and the middle class; and at the bottom of the economic ladder is the native population.

⁵ Mainly Arabs and smaller numbers of British Indians and Ceylonese.

Europeans. Some 242,372 Europeans,⁶ or less than half of 1 percent of the total population, occupy the commanding positions in every walk of life of the Archipelago. More than 24 percent are in the civil service, where they occupy the leading administrative positions; 53.8 percent are engaged in large-scale agriculture, extractive industries, transportation, and commerce; 13.2 percent in professions; and the remaining 8.7 percent are engaged in a variety of other occupations. On the whole, large-scale industry and trade, as well as administration, are almost exclusively under the control of Europeans.

TABLE 2.—Occupational distribution of the population of the
Netherlands Indies, 1930

OCCUPATION	EUROPEAN	NATIVE	CHINESE	FOREIGN ASIATICS
	Percent	Percent	Percent	Percent
Agriculture and mining	22.0	70.0	30.9	19.3
Handicraft and manufacturing ...	5.5	10.4	20.0	14.0
Transportation	12.9	1.4	2.7	4.8
Trade	13.4	5.4	36.6	52.7
Professional service	13.2	0.7	1.5	2.3
Government service	24.3	2.4	0.6	1.4
Other	8.7	9.7	7.7	5.5
Total	100.0	100.0	100.0	100.0
	:	:	:	:

Grundlagen und Entwicklungsrichtung der landwirtschaftlichen Erzeugung in Niederländisch-Indien, W. K. G. Gretzer, Berlin, 1939.

Chinese. Second in importance are the Chinese, who settled in the Indies long before the advent of the Dutch. From an economic standpoint the Chinese - more than 1 million in number - constitute one of the most important groups of the community. They are widely employed as skilled artisans and in industries and agriculture; 50.9 percent of the Chinese find employment in these occupations. Many of them are foremen, supervisors, or independent entrepreneurs.

The Chinese influence is felt most strongly in trade. The 36.6 percent engaged in trade act as middlemen between the natives and Europeans in marketing the goods imported by the latter for native consumption; they compete advantageously with either group and have become indispensable as intermediaries. The Foreign Orientals, who number over 100,000, follow in the footsteps of the Chinese, although their trade operations are on a smaller scale. More than half of this group consists of traders.

Natives. An entirely different picture is presented by the occupational distribution of the native population. The unmistakable agricultural character of the Islands is shown by the fact that 70 percent of the natives are small-scale farmers. Although 10.4 percent are classified as artisans and industrial workers, they are in effect chiefly the former rather than the latter. The natives are very poorly represented in all other occupations: only 5.4 percent are in trade; 0.7 percent in the

⁶ From two-thirds to three-fourths of this group consists of Eurasians.

professions; and only 2.4 percent in government service. On the other hand, 9.7 percent of all the natives are found in the last occupational group, the so-called "other occupations." Here they play an important role as house-servants.

ECONOMIC WELFARE

The outlined occupational distribution points to a sharp economic stratification along racial lines. The economic differentiation in the Netherlands Indies may be illustrated by the total income tax paid by each group in 1925.⁷ In that year, 78,611 Europeans paid an income tax amounting to \$10,169,000, or an average of \$129; 394,971 foreign Asiatics paid a total of \$3,528,000, or an average of \$9, while 3,178,666 natives contributed a total of \$5,785,000, or less than \$2 per taxpayer. This evidence warrants the conclusion that the "East Indian economic pyramid has a very broad base, made up mostly of the indigenous people, and that this base quickly converges into a narrow sharp point, with the foreign Asiatics forming the bulk of the center, and the Europeans, with a sprinkling of foreign Asiatics, at the top."⁸

A better picture of the situation is revealed in a number of studies dealing with the economic well-being of the farmers. Dutch investigators of the economic conditions of the rural population are of the opinion that for the majority of the population the standard of living ". . . is not far removed from the bare necessities of life . . ."⁹ This is supported by the conclusion that "80 % of the annual incomes of the rural population is needed for the acquiring of their necessary food."¹⁰

The standard of living of the rural population could be raised by increasing the productive capacities of industry and agriculture. Apart from the problem of greater industrialization of the East Indies, it may be noted that the contribution of agriculture depends mainly on the further extension of cultivated land in Java, a higher standard of nutrition, and an increase in cash value of products and in yield. The first problem hardly admits of solution; the area still available for cultivation is too limited, and the amount that could be added to the present crop is insignificant. A great deal, however, could be done to raise the yields, considerably below those in a number of other countries, through utilization of artificial fertilizers. Not only would output be increased for the land already under cultivation, but less fertile soil could be put to use and better-yielding varieties introduced.

FOOD CONSUMPTION

Generally speaking, the natives consume locally cultivated food. It has been estimated that they consume 97 percent of the rice they produce, 94 percent of the

⁷ The data for 1925 were based on a quinquennial survey; the *Statistisch Jaaroverzicht* for the subsequent years does not report the income tax paid by each group.

⁸ Vandenbosch Amry. *The Dutch East Indies*. Grand Rapids, Michigan, 1933. p. 29.

⁹ Ochse, J. J., and Terra, G. J. A., "The Agricultural and economic conditions of the natives and their food consumption," *Landbouw*, Oct.-Nov. 1934, p. 375.

¹⁰ *Ibid.*, p. 375.

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corn, 100 percent of the sweetpotatoes, 97 percent of the soybeans, 89 percent of the cassava, and 70 percent of the groundnuts.<sup>11</sup> Besides these principal items, they consume fish, sugar, coffee, copra, and fruit, but almost no meat or dairy products.

TABLE 3.—*Per-capita consumption of principal foods in Java, averages 1916-1924, 1926-1930, 1934-1938*

| YEAR        | RICE          | CORN          | CASSAVA       | SWEET-<br>POTATOES | PEANUTS       | SOYBEANS      |
|-------------|---------------|---------------|---------------|--------------------|---------------|---------------|
|             | <i>Pounds</i> | <i>Pounds</i> | <i>Pounds</i> | <i>Pounds</i>      | <i>Pounds</i> | <i>Pounds</i> |
| Average:    | :             | :             | :             | :                  | :             | :             |
| 1916-1924 : | 212           | 83            | 295           | 75                 | 8             | 8             |
| 1926-1930 : | 194           | 98            | 278           | 59                 | 6             | 10            |
| 1934-1938 : | 181           | 89            | 306           | 59                 | 5             | 10            |
| .           | :             | :             | :             | :                  | :             | :             |

*Indisch Verslag*, 1928, 1930, 1939.

Table 3 shows that consumption of rice, the most important food crop, has declined by about 15 percent in the course of about two decades, because of the failure of rice production to keep pace with the rapid increase in population and the restriction of rice imports in consequence of the depression.

#### TAXATION AND INCOME

Theoretically, the Government of the Netherlands Indies claims control of the land, and the natives pay a rental, rather than a tax, for the land they cultivate. This rental, which is essentially a land tax, accounts for about 10 percent of the Islands' total taxation in any year.

The tax is not uniform, since it is based upon the productivity of the soil, which varies considerably in different sections. In some less fertile provinces the land tax amounts to about \$1 per acre, while in those producing the best crops, such as sugarcane and tobacco, the tax may reach about \$3 per acre. A study of the economic conditions of a number of farms shows that in 1932 the land tax from irrigated fields amounted to 20 percent of the yield; from dry land, 12 percent; and from the compounds, 10 percent.<sup>12</sup>

The average yearly income of a peasant in 1920 amounted to \$74.<sup>13</sup> A more detailed account of farm income in 1926 is taken from a report dealing with the effects of taxation upon the natives of Java. In that year 78 percent of the peasantry had a yearly income ranging from \$48 to \$59; the income of 19.8 percent of the peasants averaged about \$12; and only 2.5 percent of the wealthy landholders received an income of \$436.

<sup>11</sup> Rothe, Cecile, "Industrial Development and Home Consumption in the Netherlands Indies," *Bul. Colonial Inst.* Amsterdam, Nov. 1938.

<sup>12</sup> Ochse, J. J., and Terra, G. T. A., *op. cit.*, p. 369.

<sup>13</sup> Furnivall, J. S., *Netherlands India*, Cambridge, 1939, p. 398. The author refers to a study by Dr. W. Huender.

## SAVINGS AND CREDIT

Since the income of the farmer is so low, he is unable to save a surplus that would provide a basis for accumulation of capital. Government efforts to teach the peasants the habit of saving have not met with success, chiefly because of the limited income. The lack of savings is having a distressing effect on the agricultural economy of the natives. The peasant is unable to fall back on his own resources, and credit becomes the only solution. Loans may be secured from private money lenders or from credit institutions organized by the government to combat widespread usury.

*Private money lenders:* Interest rates exacted by money lenders are very high, amounting to 100 percent or more a year, or 10 to 15 percent a month on small loans. The Chinese and Arabs maintain practically a monopoly on this type of credit. One favorable aspect of the credit situation is that two factors limit the natives' indebtedness, the first that their land cannot be mortgaged - but for this restraining influence the peasant would often be unable to free himself from debt - and the second and more important that most of the money lenders are non-natives, who cannot own land. Since the peasant cannot lose his land, the money lenders are not inclined to advance large loans.

Since attempts to outlaw usury have been unsuccessful, the government has decided to compete with private money lenders through the organization of three popular credit systems: the government pawn shop service; the "dessa lumbungs," or rice granaries; and village banks.

*Government pawn shops:* The government maintains about 500 pawn shops in the most important parts of the Indies. In towns where such shops are established, no private pawn shop may operate. The government shops advance sums against pawned articles. Interest rates in these shops are high, varying with the size of the loan. For sums not exceeding 25 guilders (\$13.15 at the current rate of exchange) the rate is 2 percent per half month, with a minimum of 1 percent; on loans from 75 to 100 guilders, 3 percent per month; and on loans exceeding 100 guilders the interest rate is 1 percent per month. In 1933 the pawn shops advanced a total of 11 million dollars against 113 million articles pawned, or an average of 23 cents per article. It has been estimated that between 10 and 20 million people are served by these shops.

*Village rice granaries:* The "dessa lumbungs," or village rice banks, of which there are about 6,000, are communal enterprises operated by the village government with the help of the Dutch Civil Service of the Netherlands Indies. They are an elaboration of the long-established village practice of storing seed and food in a common granary. The new features are that the banks accept rice for storage, and in times of crop failure, or for any other reason, rice loans are advanced against payment of an interest in kind, amounting to about 25 percent. In general, the rice banks lend an average of 200 pounds of rice per borrower.

*Village banks:* The aim of the village banks is to furnish small cash loans to be repaid in 10 weekly installments. In 1933 the Netherlands Indies had 7,114 such

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banks, with a combined capital of about 4.4 million dollars, and loans totalling \$11,550,000 to 1,108,000 borrowers, or over \$10 per borrower. These loans carry a rate of interest amounting to 4 percent for 10 to 12 weeks. In practice "this 4 percent means between 30 and 40 percent per year of the sum actually at the disposal of the borrower during the term of the advance."<sup>14</sup>

*General Bank for Popular Credit:* Another credit source is the General Bank for Popular Credit. Because of the heavy operating expenses and the necessity of building up assets quickly, the interest rates range from 10 to 18 percent on amounts up to \$400, and from 8 to 12 percent on amounts of \$400 and over. Though the primary object of the Bank is to lend money to natives, non-natives are also entitled to loans, chiefly for the promotion of agriculture, commerce, and fishing, and for the construction of houses, and similar purposes. In actual practice, the greater volume of loans is extended to non-natives. The total amount of loans outstanding in 1938 was 14 million dollars of which 6 million was advanced to 385,979 native borrowers, or an average of \$15 per loan.

*Evaluation of government credit systems.* Students of the credit problem in the Netherlands Indies are agreed that the benefits to natives of the government-sponsored credit system have fallen short of expectations. The main weakness is that "the structure of the native community is such that officially organized credit does not stimulate production to any appreciable degree, nor does it increase the circulation of money."<sup>15</sup> Interest rates are too high, and the loans, often very small, cannot meet the real agricultural needs of the peasants. On the other hand, "The great virtue of the village banks and the General Bank for Popular Credit is that these banks try to get their clients out of debt by keeping their advances within the limits of their power to repay, by allowing them to return the money in a series of short-term installments."<sup>16</sup> It is generally admitted also that conditions under which these credit institutions advance loans are to be preferred to those exacted by the money lenders; that they help the natives to hold their own in critical periods; and that they teach them how to use money and how to discharge a debt from their income.

#### INDUSTRIALIZATION

Perhaps the fundamental factor in the economic welfare of the natives is that the productive capacity of Java's agriculture and industry could not keep pace with the growth of population. To be sure, part of the increase was offset by the great extension of cultivated land by enlarged and improved irrigation, and the planting of better varieties and commercial crops. Yet as time went on the gap between production and population increased, particularly with the onset of the depression of the early 1930's. To remedy this situation, the Government of the Netherlands Indies embarked on a program of greater industrialization of Java.

<sup>14</sup> Fruin, Th. A., "Popular and Rural Credit in the Netherlands Indies," *Bul. Colonial Inst. Amsterdam*, May 1938, p. 165.

<sup>15</sup> Fruin, Th. A., *op. cit.*, p. 168.

<sup>16</sup> *Ibid.*, p. 174.

The main objective of industrialization is to make the country more self-sufficient - less dependent upon imported manufactured goods of vital importance to the country. This procedure would provide employment for a greater number of natives, who would also benefit from the increased sales of raw materials raised on the farms. The natives would receive additional income from "supplementary occupations without disturbing any more than is necessary the traditional agricultural economy to which it is accustomed. It is hoped, however, that the native population will gradually develop greater initiative in commerce and industry and become less dependent economically on the enterprise of foreign industry."<sup>17</sup>

The government does not aim to achieve self-sufficiency through establishment of large-scale industrial undertakings, which it considers neither feasible nor desirable. Emphasis is placed on small native shops and enterprises employing from 50 to 500 people, all producing goods for domestic consumption. The government is careful not to extend production in a way that might seriously upset the trade balance with other countries. Textiles are, perhaps, the one important exception.

According to available information, considerable progress has been made in this field. It is estimated that during 1936-1938 small-scale industrial production increased by some 22 million dollars. In 1937 the total output was valued at 99 million dollars, compared with a value of 43 million for large-scale industrial undertakings. In 1936 the latter employed only 120,000 workers as against 1,580,000 workers in small industries.<sup>18</sup> Industrial development in Java in no way threatens the centuries-old agricultural economy of the island. It is rather expected that this measure, in conjunction with such others as internal migration, will help to relieve the population pressure on land and raise the standard of living.

#### COLONIZATION

A more direct means of relieving the pressure of population on Java is that of emigration to the Outer Provinces. This is an old policy, dating back to 1905, when the first colonization experiment was tried out in the Lampong districts of Sumatra. At that time the population of Java was estimated at 30 million. Since then, and until about 1930, the program was not vigorously pursued.

The crushing economic depression together with the excessively dense population, once again brought to the fore the problem of emigration. In recent years the population of Java has been increasing at a rate of 600,000 annually. The Central Bureau of Statistics of the Netherlands Indies estimated that if this rate should continue and no emigration take place, Java's population would reach 116 million by the end of this century. In other words, the density of population would reach the unprecedented number of 2,27½ persons per square mile. This prospect must be viewed in conjunction with the fact that Java has reached the point where a regular increase in population cannot be compensated for by the cultivation of new land.

<sup>17</sup> Van Eeghen Geertrui M, "The Beginnings of Industrialization in Netherlands India" *Far Eastern Survey*, June 9 1937, p. 130

<sup>18</sup> Rothe Cecile, *op cit*, pp. 6-7.

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In 1937 the government set aside a special fund for the promotion of native agricultural colonization. Search for satisfactory colonization areas was extended, and the number of emigrants has been steadily increasing. The number of colonists increased from 13,000 in 1936 to 45,000 in 1939; and in 1940 the number is expected to reach 55,000. This is far from the migration of 30,000 families needed to counterbalance the annual growth, but it is an important step in solving the population problem of Java. Prior to 1937 the East Coast of Sumatra was the main center of migration; now new settlements are being established in Borneo and Celebes.

The colonization or migration movement is beset with a number of difficulties. The Outer Provinces have tremendous forest reserves but limited fertile and easily irrigable land suitable for the type of cultivation to which the emigrants were accustomed in Java. For the most part the cultivation of the soil in the Outer Provinces still remains in the stage of so-called shifting (*landang*) or dry cultivation. When after a few years the soil shows signs of exhaustion and yields begin to decrease, the natives turn to new areas by burning down a part of the forest. To the Javanese colonists, whose agricultural ideal is an irrigated field that guarantees a sufficient food-supply regularly, cultivation of dry land is no attraction. Under the circumstances, therefore, the government must help in clearing the forests, in making irrigable ground available, and in various other services that call for financial aid.

AGRICULTURAL PRACTICES

The Netherlands Indies is primarily agricultural; manufacturing is confined chiefly to the processing of agricultural products. The petroleum and tin industries, although of great importance, have made little impression on the agricultural character of the Islands. In 1928 agricultural exports made up 78.5 percent of all exports; and in 1938, after the depression, they still comprised 65 percent.

The agricultural economy of the Archipelago falls into two distinctive types: small-scale native farming and large-scale European plantation farming. Practically the entire output of the plantations is intended for export; that of the native farms is for both domestic consumption and export. This flexibility in character of native production has served to offset to some extent the ill effects of sharp economic fluctuations, making it more elastic, and less painfully adjustable to economic depressions than the highly specialized plantations. As one writer has expressed it:¹⁹

"He [the native] does not put all his eggs in one basket. The cord that binds any new industry of his with the ancient village economic life is not cut through. He also plants food crops and even though in boom years he may neglect them somewhat . . . and buy foreign rice with the money he earns from his rubber, as soon as the tide turns nothing prevents him from planting rice beside or even in his rubber plantation and waiting quietly till the storm passes."

In recent years native agriculture, especially in the Outer Provinces, has been furnishing an increasing share of the value and volume of agricultural exports.

¹⁹ Ochse, J. J. and Terra, G. J. A., *op. cit.*, p. 365. Quoting Van Gelderen.

In 1894, plantations accounted for 89 percent and native agriculture for 11 percent of the total value of exports; in 1924, the figures were 75 and 25 percent, respectively; and in 1938, 60 and 40 percent.

The sharp decline in the exportation of sugar, a purely plantation commodity, has contributed largely to the diminished share of the plantations. It is possible that with improved demand for tropical products, this share may increase. The fact remains, however, that to date the rising trend of native exports is unmistakable. Native production is now strongly represented in the principal export crops, and there is no reason to expect a decline in the future; in fact, conditions would seem to point to an increase.²⁰ The natives have learned from European plantations how to raise such crops with a fraction of the capital invested by the planters. Notwithstanding this development, the two types of agriculture differ to such an extent that it seems advisable to consider separately the main features of each.

NATIVE AGRICULTURE

Land tenure: The views of the native population of the Netherlands Indies on landownership are expressed in the following proverbs: "Who makes, has," and "Who uses, has." In other words, the land belongs to those who cultivate or use it. To be sure, before the advent of Dutch colonization the individual and communal rights to land were limited by native rulers. While the peasants considered the fields their own by virtue of cultivation and undisturbed occupation, they were not free to dispose of them.

In the seventeenth century the domination of the Dutch was carried on through the Dutch East Indian Company, whose main concern was to fill its coffers as quickly as possible - its methods of achieving this goal - of which illegal sales of land was one - were not always above reproach. "In the days of the Company," a noted student of colonial problems wrote, "little trouble was taken to analyze the rights of feudal persons, of rulers and of the Company to the land. The Company seems to have adopted itself in the main to the doctrine recognized throughout the East and throughout Africa, that everything under Heaven belongs to the Ruler."²¹ The Company did not hesitate to barter away large tracts of land whenever it needed money.

This policy came to an end early in the nineteenth century, when the government declared itself the sole owner of the land. In theory, the concept of state ownership does not permit of any other right to land: but in actual practice, particularly as it affected the land already under cultivation, this was a doctrine with "a bark worse than its bite." This modification seems to hold true because the pronouncement concerning the supreme rights of the state was coupled with the institution of another very important principle; namely, that the land cultivated by the natives should be left in their hereditary possession by virtue of occupation, and that it could not be alienated from them. The protection of the vested interests

²⁰ Bloch, Kurt "A new nation arising." *Barron's*, July 31, 1939, p. 20

²¹ Angelino, A. D. A. DeKat, *Colonial Policy*, University of Chicago Press, v. II, p. 434.

of the population in the land became the guiding doctrine of the land policies promulgated in the Netherlands Indies from 1870. In that year the basic agrarian law was enacted, which, with supplementary acts issued since then, is still in existence today.

As a consequence of these measures the rights to land in the Netherlands Indies fall into four groups: (1) the general sovereign rights of the state to all lands; (2) the rights of the native farmers to lands cultivated by them; (3) the rights of the native rulers; and (4) the rights granted to others by these groups.

The peasant may transfer his right of ownership to a second party, who must, however, also be a native - this requirement constitutes perhaps the cardinal principle of the present land tenure system in the Indies. Under no condition may a native sell his land to a foreigner. In this manner their land - the only wealth they possess - was preserved by the Dutch for the Indonesians. The possibility that the natives might lose some of their land through such indirect means as long leases caused the government to enact severe restrictions in this direction also. Natives are permitted to lease land to non-natives only by a transaction supervised by the government. To be effective, the lease contract must be drawn up by a government official whose duty it is to protect the interests of the natives. In addition, the agreement must be confirmed by the government administrator of the district, who has the power to annul a lease drawn up in a manner that might infringe upon the welfare of the natives.

The duration of a lease for rice fields is usually 3.5 years; however, it is possible to lease them for longer periods, up to a maximum of 21.5 years. In this case the land must be returned to the native farmer for cultivation every third year. For dry fields the maximum rental period is usually 12 years. On the whole the main concern of the government is that leases shall in no way infringe upon the food or water supplies of the natives.

These were the principal measures enacted for the protection of the natives against abuse at the hands of those eager to get hold of their land. The active government intervention on behalf of the land rights of the Indonesian population is a radical departure from agricultural policies of most colonial powers. Even in the Western Hemisphere the preservation of the farmers' land is a matter of less concern than in the Netherlands Indies. The all-important fact is that the tenancy system, so widespread in India or the United States, is practically nonexistent in the Islands. This factor should weigh heavily in favor of the Dutch in any attempt to evaluate their colonial rule.

Arable land: Data concerning the extent of native agriculture are not available, but in Java and Madoera, the center of this type of agriculture, arable land amounted to 19.4 million acres in 1938. In the future the cropland of these islands can be little expanded; it has been estimated that "no more than an additional 300,000 hectares [741,000 acres] of new land, or less than four percent of the present area occupied by native cultivation, can be made suitable for agriculture."²²

²² Day, Clive, *op. cit.*, pp. 375-376.

In recent years the farmers tilled 59 percent of the total land area of the islands. Considering also the European plantation land under cultivation in these two islands, the tilled land represents 70 percent of the total.

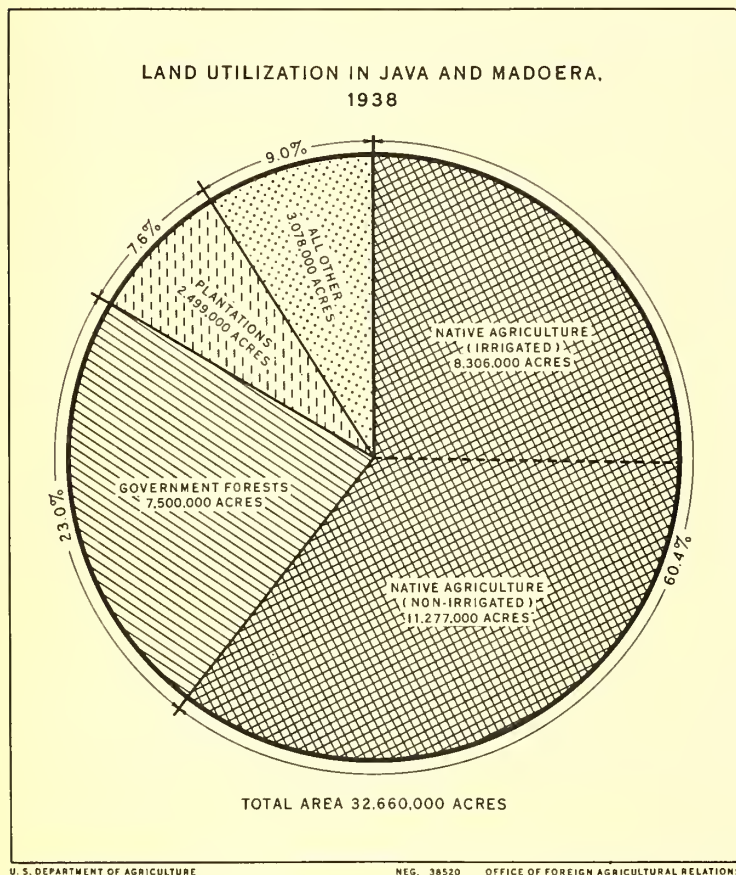


Figure 2.—Land utilization in Java and Madura.

"sawahs," or irrigated fields, separated by small dams that keep the water on the fields; of nonirrigated dry fields; and of "compounds," or land around the houses used largely for the cultivation of fruit trees and other crops not grown in large quantities on either irrigated or nonirrigated land. The compounds, which contribute much to the variety of the Javanese diet, represent approximately 15 percent of the total arable land of Java and Madura.

The place of the rice fields and compounds in the native economy may be determined from a study dealing with this problem, which showed that 72 percent of the produce of the farms was consumed on the farm and 28 percent converted into cash and that in the case of the compounds 32 percent was consumed and 68 percent sold. The

Size of landholdings:

Despite the fact that hardly any other country cultivates so large a proportion of its land, the density of population in Java is so great that the average holding of a Javanese farmer is not more than 2.5 acres. There has been a tendency toward accumulation of larger holdings in the hands of some natives, but in general the land is held in minute shares. "Even in West Java," one writer notes, "where land was sometimes taken over for debt, there were only some forty land-owners with as much as 75 acres each."²³ Thus, one of the basic distinctions between native and European agriculture in the Netherlands Indies is the small-scale character of the former.

Types of farming:

The arable land tilled by natives is made up of

²³ Furnivall, J. S., *op. cit.*, p. 397.

number of farms covered by this study was small; however, it was the contention of the authors that "In view of the fact that the families investigated in the course of this test correspond more nearly with the actual average social relationship amongst the people, in our opinion these figures give a good picture of conditions as they actually are."²⁴

Irrigation. Data concerning the area irrigated throughout the Indies are not available, but it is known that in Java irrigated land accounts for 42 percent of the total cultivated land. Irrigation is of great importance in the Islands. There is not only an annual period of low rainfall, but the fluctuations in rainfall during the monsoon have a great influence on crops, and may result in the most disastrous consequences if there is no adequate irrigation system. For this reason irrigation has been in existence in the Islands, especially in Java, for centuries. In addition to that required for the production of rice, the native commercial agricultural products must also be irrigated during the period of insufficient rainfall. Sugarcane is the crop of European cultivation to which irrigation is of vital importance during the dry season, when the cane is planted.

Irrigation water is secured from various sources, such as rivers, reservoirs, and wells. In practice river irrigation of the gravity system is chiefly utilized. The advantage of this system is that silt, carried by tropical rivers in large quantities, remains on the soil and acts as a fertilizer. Irrigation, formerly left to the natives, is now to a great extent under government supervision and control. A notable feature of the government's irrigation policy is that water is supplied free of charge; there is not, as in India, for instance, a water-rate; nor is land revenue enhanced because water is supplied by the government.

Fertilizers: A characteristic feature of native agriculture, particularly as it affects the production of the main food crops, is the fact that little use is made of fertilizers. The large capital outlays for fertilizer of the Japanese farmers are unknown in the Netherlands Indies. On rare occasions the farmers spread some stable manure on the land during the dry season; they seldom use artificial fertilizers. This negative attitude toward better farm practices should be attributed not only to the more fertile soil of the Indies as compared with that of Japan, but also to the fact that, "As a rule he [the Javanese peasant] does not attempt to modify the environmental conditions in order to obtain a better crop when these are unfavorable, when for example the soil is poor, he can find a variety adapted to this poverty."²⁵

Soil fertility is maintained largely by the nutritive substances in the water irrigating the fields. Much of the irrigation water receives considerable quantities of nitrogen through the drainage of the various villages along the course of the canal and of the streams supplying the water. This does not, however, sufficiently compensate for the lack of fertilizers, both natural and artificial. The yield of rice in Java is about 30 bushels per acre compared with 70 bushels in Japan.

²⁴ Ochse, J. J., and Terra, G. J. A., *op. cit.*, p. 361.

²⁵ "Farm economics, recent investigations on the economy of native farming in Java," *Internatl. Rev. Agr.* [Rome], Apr. 1932, p. 93 E.

Farm implements. The small size of native fields, the methods of preparing the soil for planting, and the condition of the soil during growth, together with the usual native reluctance to depart from established customs and traditions, greatly retard the utilization of improved agricultural equipment. Implements usually consist of a native or Chinese plow, a heavy hoe, a wooden harrow, and a small harvesting knife. The buffaloes and oxen furnish the chief traction power; horses are almost never used on land. It is reported that "In Lombok, in the Timor Residency and in some other parts of the Islands where the inhabitants have not yet acquired the habit of using the plough, the soil is prepared by chasing buffaloes over the inundated paddy fields."²⁶

Crop rotation: As a consequence of the great variety of crops, particularly in Java, the crop rotation system is complex. It is built around rice, and other food or industrial crops complete the picture. It has been estimated that each acre of irrigated land produces an average of about a crop and a half of rice and a half crop of some other commodity per year.

Agricultural research: Since agriculture forms the basis of the economic structure of the Netherlands Indies, it has enjoyed the full attention of the government for many years, and has received from it considerable support and cooperation in the form of widely disseminated agricultural research carried on by the Department of Economic Affairs. In addition, a great deal of research is done by private organizations. All such work is carried on by three types of experiment stations: (1) the General Experimental Station for Agricultural Industry; (2) the stations of the Central Association of European Plantations; and (3) the private experiment stations.

The General Experimental Station for Agricultural Industry is primarily concerned with native agriculture, and has as its object the institution among the natives of new and improved agricultural practices discovered in the course of its scientific research.

The Central Association of European Plantations consists of the experiment stations of West Java (a consolidation of the General Tea Station established in 1893 and the Rubber Station at Buitenzorg established in 1915); of Middle and East Java, concerned chiefly with coffee and cacao production; and of Besouki, concerned with tobacco, coffee, and rubber. One of the best-known private experiment stations is the Pasourouan Experiment Station, established by the sugar planters. In Sumatra, where the plantation has reached its highest point of development, are the Medan Experiment Station, organized by the Deli Tobacco Growers' Union in 1895, and the General Experimental Station of the Sumatra Rubber Planters' Association.

The plantations are the chief beneficiaries of agricultural research; the widespread illiteracy of the natives is a barrier to ready assimilation of the knowledge made available by the experiment stations. Some of the improvements, however, have reached native agriculture through the efforts of agricultural authorities and through the experience gained by the natives in their contact with the plantations.

²⁶ Dakker S., "The live-stock in the Netherlands Indies and the veterinary service," *Bul. Colonial Inst. Amsterdam*, May 1939, p. 196.

PLANTATION AGRICULTURE

The first plantations were established in the first half of the nineteenth century, but real development did not occur until the 1870's. The so-called "culture system" greatly retarded the growth of plantation agriculture as it now exists. Since this system forms a landmark in the history of agricultural development of the Netherlands Indies and has an important bearing upon the existing plantation agriculture, a description of its principal features seems pertinent.

Institution of the "culture system": The view that "every colony exists, or ought to exist, for the benefit of the mother country" is as old as the colonial question itself. The Dutch adhered to this doctrine, as did all other colonial powers from ancient times. However, in the third decade of the nineteenth century the East Indies not only failed to contribute anything to the treasury of the Netherlands, but in effect became a drain upon it, at a time when the mother country was beset with financial difficulties of its own. In order to secure increased revenues from the East Indies, the government decided to increase the cultivation of certain native export crops for its own account and under its own supervision. The products, such as coffee, tea, sugar, tobacco, and indigo, were to be accepted by the government in lieu of money taxes. The government in turn was to export these commodities and secure profits largely in excess of cost.

Despite its profession of benefiting the natives, the "culture system" degenerated into one of forced labor, almost entirely at the expense of the natives affected by it. Private large-scale enterprise fared no better. Production and sale of export crops rapidly developed into government monopolies. Under such circumstances ". . . the Culture System grew until it overshadowed and blighted the whole economic organization of the country, and nothing remained but the Government as a planter on a superhuman scale. . ." ²⁷ In this capacity the government of the Islands succeeded in enriching the Dutch treasury by 832 million guilders in the course of 1830-1877.

Failure of the system: The violation of the interests of the natives did not go unchallenged, as opposition in the mother country was voiced by those whose thinking about colonial problems was colored by ethical considerations. But perhaps the most important single factor that helped to put an end to the culture system was acceptance of the idea that private initiative and free labor, as opposed to government monopoly and forced labor, were the only effective methods of enriching the mother country as well as the colonies.

Partly under the pressure of these forces the Agrarian Act of 1870 was passed, paving the way for the rapid development of private estates and large-scale agriculture, and sounding the doom of the culture system. The cultivation by the government of a number of export products was discontinued prior to 1870. Compulsory cultivation of sugar continued till 1890, and coffee continued to be cultivated until 1915. On the whole, however, the decade of 1870 marked the end of the forced-culture system and the beginning of the plantation system now in existence.

²⁷ Furnivall, J. S., *op. cit.*, p. 121.

Leases and concessions: In accordance with the land law of 1870, no European or Foreign, Oriental is permitted to buy any land; nor is the government permitted to sell land except for small pieces for the extension of towns, villages, or for industrial purposes. On the other hand, the difficulties in connection with grants were removed when the new agrarian law provided for long-term leases or concessions; it also enabled western entrepreneurs to lease land from natives for relatively short periods of time. The lands of the public domain and, to a much smaller extent, those of the private estates²⁸ form the basis of the large plantations. Leaseholds are granted for a period not longer than 75 years, and, in Java and Madoera, in sections of about 900 acres; no restriction is placed on the number of sections covered by one lease. In the Outer Provinces the sections may be as large as 9,000 acres.

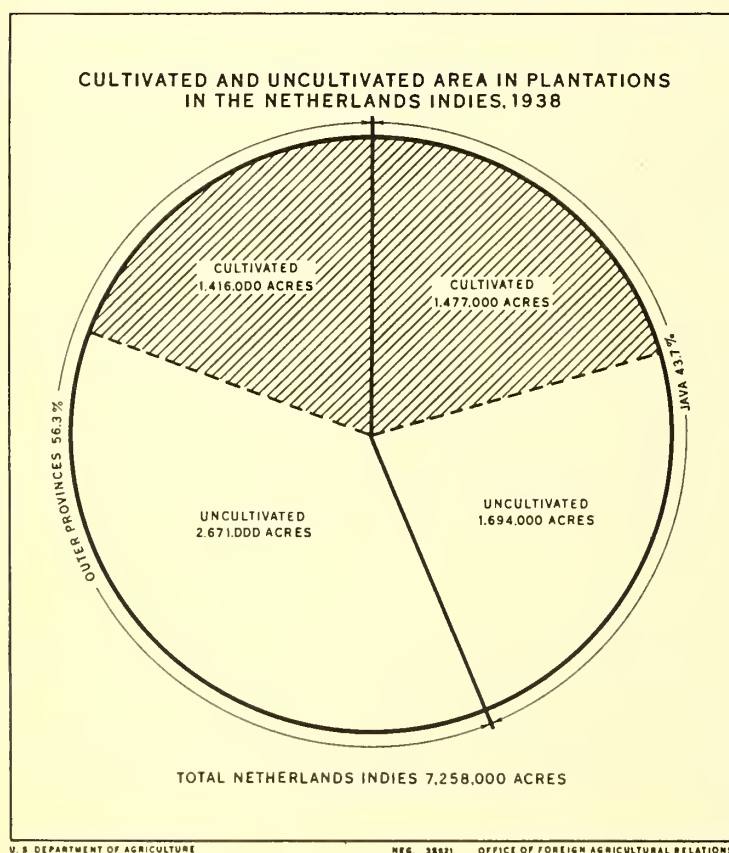


Figure 3.—Plantation acreage in the Netherlands Indies.

The long-term leaseholder has to pay an annual, relatively small rent, ranging from a maximum of \$2 per acre and less. Ordinarily, the rental is not payable during the years of preparation before it becomes productive. The planters are subject to the existing taxes and those still to be introduced, except that the land tax is not to be levied during the first 10 years following the registration of the leasehold or concession right.

Development: Since 1870, especially prior to 1930, plantation agriculture developed by leaps and bounds. The profits were considerable, and from 1905 the flow of Dutch, English, American, Belgian, and French investments continued unabated. Of an estimated

²⁸ During the period of control by the East Indian Company, and also in later years, various governors sold large tracts of land in Java to help fill the treasury. Along with the land went feudal rights over the native population occupying it. In recent years the private estates covered an area of about 900,000 acres. In order to put an end to the abuses suffered by the native population at the hands of the landlords, the government has been repurchasing the estates, or expropriating them at a price set by the court.

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1.6 billion dollars invested in the Netherlands Indies before the depression,<sup>29</sup> European plantations accounted for approximately 860 million.<sup>30</sup> Of this total, 675 million dollars was invested in Java, and the remainder in the Outer Provinces. In Java 82 percent of the invested capital was Dutch and the remaining 18 percent foreign; in the Outer Provinces the respective percentages were 56 and 44. During the period 1925-1929 dividends paid by the plantations averaged 63 million dollars annually. Capital investments in the plantation industry came to an end with the advent of the economic crisis.

In 1938 the Netherlands Indies had a total of 2,402 estates, occupying an area estimated at 7,260,000 acres.<sup>31</sup> Of this, 2,803,000 acres were planted,<sup>32</sup> or an average of about 1,200 acres per estate. In general, however, the amount of land planted per estate is largest in Sumatra, where the average is 2,100 acres, compared with 1,200 acres in Java and only 232 acres in other sections of the Outer Provinces.

Although estate culture came to be identified with a high degree of specialization - that is, with the cultivation of one crop - in actual practice there are estates that raise a combination of crops, such as rubber and coffee, rubber and tea, tobacco and rubber, or tea and cinchona. It has been estimated that 1,681 estates plant only one crop. In the Outer Provinces, where plantation agriculture has reached its highest point of development, 1,034 estates out of a total of 1,215 are engaged in the planting of a single crop.

The estates raise more than 30 different tropical export crops, but an examination of the data shows that a few of them account for the greater part of the entire plantation industry. Eight crops (rubber, tea, coffee, sugar, tobacco, coconuts, cinchona, and oil palms) account for 94 percent of the total.

*Labor.* The plantations are worked with hired labor. In the densely populated island of Java the plantations have no special labor problem; all the labor needed by the large estates may be secured from the surrounding villages. In recent years, with the decline of the sugar industry in Java, the labor problem has assumed correspondingly less importance. In 1936 the sugar estates employed a total of only 27,000 workers, compared with 132,000 in 1929.

The labor problem on the plantations of the Outer Provinces is of a different nature. Because those islands are sparsely populated, the plantations must depend almost entirely on imported labor, the greater part of which comes from Java. The supply of labor from southern China, which formerly was of great importance, has declined in recent years. The conditions under which these workers are employed and the problem of holding them to the provisions of a contract have been the subject of a great deal of discussion and recrimination in and outside of the Netherlands Indies for many years.

<sup>29</sup> The Dutch share is variously estimated from two-thirds to three-fourths of the total.

<sup>30</sup> 1930 *Handbook of the Netherlands East-Indies*, Department of Agriculture, Industry, and Commerce, Buitenzorg, Java.

<sup>31</sup> Sixteen of which are owned by the government.

<sup>32</sup> This includes 77,000 acres planted by the government estates.

In recent years the employer-employee relations have been more clearly defined, and the abuses prevalent in the past almost eliminated. While no minimum wage law has been enacted, it is stipulated that the wages of the laborer must be sufficient to enable him to supply himself in reasonable amounts with the necessities of life, in addition to 15 percent for special needs.<sup>33</sup> The work day must not exceed 9, and in certain cases not more than 8, hours; in no case must the laborer work for more than 6 hours in succession.

The desertion of a contract laborer is still subject to the penal sanction, but it is significant to note that this type of labor is disappearing. More important, the coolie ordinance of 1931 provided for the gradual replacement of contract labor by free labor. The impetus given by that law was greater than was originally anticipated. In 1930, 771 estates employed 478,915 workers; contract laborers numbered 352,610, or 73.7 percent of the total. In 1936, among the 337,501 coolies on 434 estates only 18,585, or 5.5 percent of the total, were under contract.<sup>34</sup>

On the whole, under the pressure of public opinion the planters in the Netherlands Indies have had to improve labor conditions. Prior to the World War and for a time thereafter, the estates were solving their labor problems "not by making the jobs more attractive, but through backing up the contracts with penal sanctions."<sup>35</sup> Recently there has been a decided shift toward more humane treatment. The workers now are largely Javanese. Nearly all are free, and the penal clause has been practically discarded.

### AGRICULTURAL PRODUCTION

Official statistics on native production of principal food crops relate only to Java and Madoera, Bali, and Lombok. Since 96.6 percent of the harvested area of these crops is concentrated in the first two islands, the data in the ensuing discussion, unless otherwise specified, deal with Java and Madoera.

The native crops are numerous. Chief among them is rice, cultivation of which is carried on in almost every locality. Cultivation of other food crops is almost equally important, especially of corn, the basic diet in eastern Java. Cassava, potatoes, beans, peanuts, and other pulses are also important food crops. These crops are raised not only on dry land, but also on rice fields after the rice has been harvested. In addition to food crops, the natives raise commercial crops for both domestic consumption and export, of which rubber, coffee, tobacco, tea, coconuts, kapok, and a great variety of fruit are important.

The total harvested area of Java in 1938 was estimated at 21,664,788 acres, of which 68 percent was under cereals; 14.4 percent root crops; 9.5 percent pulses; 6.4 percent other native crops; and 1.7 percent under native tobacco.

<sup>33</sup> Vandenbosch, Amry, *op. cit.*, pp. 283.

<sup>34</sup> *Indisch Verkeer*, 1931, p. 222, 1937, p. 209.

<sup>35</sup> Emerson, Rupert, *Malaysia, a study in direct and indirect rule*, New York, 1937, p. 38.

## FOOD CROPS

Cereals in Java consist of two crops: rice and corn.

*Rice* Rice constitutes the economic foundation of native agriculture, because rice is the Indies' most important food crop. Of the 14,742,000 acres planted to cereals, rice accounted for 9,785,000 acres, 66 percent of all cereals, or 45 percent of the entire 1938 harvested crop area in Java. About 90 percent of the rice fields are irrigated.

The Netherlands Indies produces many varieties of early- and late-maturing rice; the period of ripening may, therefore, last from 70 to 140 days. The better-quality rice is produced by the late-maturing varieties, while the early-maturing varieties are produced in sections where the water supply is uncertain. In order to avoid mixtures, each field is planted with only one kind.

Rice is grown the year around in irrigated districts, but the heaviest planting is during the months of December, January, and February. This may explain why it is not uncommon to see rice being planted in one field, half-grown in an adjoining field, and harvested in a third field. It is important to note also that in Java favorable climatic conditions in conjunction with the well-irrigated fields result in a yield of more than one rice crop - often two crops are harvested, in addition to another food crop.

The rapid increase of population in Java has brought to the fore the problem of a sufficient food supply. Since rice is the staple diet, the government has made an effort to stimulate its production. The unfavorable economic conditions of the 1930's and the consequent policy of restricting imports likewise tended to increase the output. The results have been satisfactory, and both acreage and production have been steadily increasing. In 1938 acreage was 22 percent above the average of the period 1921-1925, and the total output increased by 24 percent. The yield of about 30 bushels per acre has remained practically unchanged. This limited yield, which is less than half the per-acre yield in Japan, is the result of failure to utilize fertilizers and to cultivate more productive varieties.

With an output of 290 million bushels the East Indies ranks as the sixth largest rice-producing country in the world. Despite the large output it was also the third largest rice importer during the years 1926-1930, taking a yearly average of 1,344 million pounds; however, the increase in output has reduced imports to an average of 527 million pounds during the years 1934-1938.

Prior to 1936 rice production in Java could not meet consumption requirements, but during the past 3 years small quantities have been exported. The surplus of Javanese rice and of that imported from abroad is consumed in the Outer Provinces. The native farmers in these islands, particularly in Sumatra, engage chiefly in the cultivation of the more profitable export crops, such as rubber, copra, and coffee; food crops are of secondary importance.



Figure 4.-The rice fields of Java feed all the Indies. The scene at top right shows plowing of the flooded paddies at the beginning of the rainy season in November. Center right,



transplanting from seedlings in foreground. Note the high-banked terraces. Lower right, bringing in the harvest, to be piled in the stacks in the background. (Courtesy *Life Magazine*.)

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*Corn* Corn is the second most important food crop of the native population. In addition to its utilization for human consumption, it is also frequently used as cattle fodder; and cattle breeding is closely associated with its cultivation. There is not a district where corn is not raised, but in eastern Java cultivation is most extensive, accounting for 65 percent of the total acreage of this crop in all Java. In Java there are three corn harvests - two *tegallan* (dry-field) harvests in the rainy season, and one harvest on irrigated rice fields in the dry season, usually as a second crop. In 1938 the total harvested area was estimated at 4,956,000 acres, or 23 percent of the total area under native crops. As in the case of rice, acreage and output of corn since the middle 1920's have been greatly augmented. During 1921-1925 the average annual harvested area was 3,994,000 acres, whereas in 1936-1938 it had risen to 5,192,000 acres, an increase of 30 percent. Output in these periods increased from 58 to 80 million bushels, or by 38 percent.

In view of the fact that corn is largely (74 percent) grown on less fertile dry land, the yields are low, in recent years generally averaging about 15 bushels per acre. Both Java and the Outer Provinces export considerable quantities, increasing in amount from 43,000 tons in 1934 to 215,000 in 1937. For several years Japan has been the principal market for this surplus crop, followed by the Netherlands.

*Cassava* Cassava, the third most extensively cultivated food crop, is the principal root crop in Java. Its food value is less than that of cereals. In native households it holds a place somewhat similar to that of the potato in Europe or the United States. Cassava is also regarded as an emergency food, consumed in greater quantities when other foods are scarce; therefore, when other food crops are abundant, there is a large surplus for exportation, to be used in the preparation of tapioca products. The dried cassava roots are likewise an important export commodity.

The United States is the principal importer of cassava products, taking about 50 to 60 percent of the total value exported from the Netherlands Indies. In 1938 the acreage planted to cassava was estimated at 2,343,000 acres, or 11 percent of the total harvested area of native crops. Output amounted to 9 million tons or a yield of 9.2 tons per acre. The crop is grown without irrigation, and the period from planting to harvesting lasts from 7 to 9 months.

*Potatoes* Both sweet- and white potatoes are grown in the Netherlands Indies, although the former predominate. In 1938 455,000 acres were planted to sweetpotatoes, compared with only 19,000 acres of white potatoes. The total output of sweetpotatoes was estimated at 48 million bushels, and the yield per acre at 105 bushels. On the whole, although potatoes are an important native agricultural commodity, they are far less important than in western Europe or in the United States. It takes 4 months to raise a crop of potatoes, usually grown as a secondary crop on irrigated rice-fields.

*Peanuts* Peanuts constitute the principal pulse cultivated in Java, and are regarded as an important food crop. For the most part peanuts are eaten in roasted form. The product is very nourishing and is employed in large quantities for the manufacture of oil. The cake is used not only as a sweetmeat but also as cattle

fodder, as are also the leaves of the plant. Almost without exception, peanuts are grown on dry land; the crop ripens in 3 to 4 months. Cultivation is fairly general, though nearly half of the crop comes from eastern Java. Acreage and output have been steadily increasing, output less rapidly than acreage. From a yearly average of 417,000 acres during 1921-1925, the harvested area was increased to 594,000 acres in the 3 years 1936-1938, or by 26 percent; in the corresponding period production increased from 518 to 573 million pounds, or by 11 percent.

*Soybeans* Next to peanuts in importance, though grown more extensively, is the soybean crop. Soybeans are an extremely nourishing food, and in Java as well as in other countries have many uses. The soybean ripens in 3 to 4 months and is usually cultivated during the dry season as a secondary crop after irrigated rice. The cultivation of the crop is largely concentrated in Java, although in recent years it has been raised in other regions.

In the past decade acreage and production have more than doubled. In 1921-1925 the average annual harvested area was 417,000 acres; this figure increased to 887,000 acres in 1936-1938, an acreage 113 percent larger. Comparable figures on production are as follows: 3.7 million bushels in 1921-1925 and 9.8 million in 1936-1938, an increase of 165 percent. Yields are low in comparison with other soybean-producing countries, averaging only about 11 bushels per acre, compared with 17 to 18 bushels in Manchuria and the United States in the past 2 years. The large increase in acreage is primarily a result of the shift from sugarcane to rice and soybeans during the crisis years.

Until a few years ago production of soybeans in the Netherlands Indies was not sufficient to satisfy demand, so that considerable quantities had to be imported annually. After 1932, however, soybean cultivation in Java expanded to such an extent that imports gradually declined, and by 1936 soybeans were being exported. At present the Netherlands Indies as a whole has an exportable surplus.

#### LIVESTOCK

Although crop cultivation is the principal means of livelihood in the Netherlands Indies, cattle breeding is also important in the economic life of the native population. In contrast to conditions prevailing in western countries, native cattle breeding consists chiefly of rearing draft animals for either agricultural or transportation purposes. The production of meat is of secondary importance while commercial dairying is practically nonexistent among the native farmers. Dairy farming is largely in the hands of Europeans and Chinese, but is not extensively followed even by these groups. Cattle breeding has a special significance for the native population in that it is considered a means of safe investment, which at any time can be converted into cash.

In 1937 livestock consisted of 671,362 horses, 4,413,000 oxen, and 3,197,354 buffaloes - a total of 8,281,716 animals. The livestock is unequally distributed over the Islands; Java, Madoera, Bali, and Lombok, the most densely populated islands

of the Indies, have 75 percent of all the livestock, while Sumatra, Celebes, Borneo, and all the other sparsely populated regions produce only 25 percent of the total.

#### RUBBER

*Background* Rubber is one of the most recent and important crops of the Middle East, which includes, in order of importance, British Malaya, the Netherlands Indies, Ceylon, French Indochina, Thailand (Siam), Sarawak, and Burma. Prior to 1913 Brazil was the world's leading rubber-producing country; almost all the rubber came from that country, from other parts of Latin America, and from Africa. This was in the form of wild rubber from an indigenous variety of trees (chiefly *Hevea Brasiliensis*), as distinguished from the cultivated rubber now chiefly marketed, which is collected from trees carefully planted and tended.

Meanwhile, toward the end of the first decade of this century, the modern motor era had arrived, and with it the mass production of rubber tires. In 1910 world production of wild rubber - more than half of which came from Brazil - reached its peak of 83,000 tons. During the same year the output of plantation rubber was only 11,000 tons.

The mounting industrial utilization was handicapped by a limited supply of available rubber, and even, as in 1910, by actual shortage. One of the consequences was a sharp advance in prices. In the 1880's prices ranged from 53 cents to \$1.15 per pound; in the 1890's from 66 cents to \$1.04; during 1900 to 1905 from 70 cents to \$1.35; and the following 5 years witnessed the highest prices since the commercial utilization of rubber became widespread. The record was reached on April 10, 1910 when rubber was quoted at \$3.12 per pound. When prices in subsequent years are considered, it is evident that Brazil, as the chief producer, enjoyed a boom lasting from the 1880's until the displacement of wild by plantation rubber. For many years rubber was Brazil's second-ranking export: it was exceeded only by coffee, and as a source of government revenue it outranked even that commodity.

*Wild versus plantation rubber* The very factors that made Brazil the chief beneficiary of the rubber industry, such as increasing demand, limited supply, and high prices, gave a tremendous impetus to the young plantation rubber industry. By 1914 plantation rubber production had made such great strides that it exceeded the production of wild rubber from all parts of the world. As time went on, production on the Middle East plantations continued to increase by leaps and bounds, while the Brazilian and other wild rubber sources became greatly depleted. In 1938 the world's exports of rubber were estimated at 895,000 tons. Brazil's share was not more than 15,000 tons, or 1.7 percent of the total; all wild rubber sources contributed only 27,000 tons, or 3 percent of the total export volume; and the plantation rubber of the East accounted for the remaining 97 percent.

*Government encouragement of plantation rubber* The plantation rubber industry in the Middle East was instituted in Malaya in 1876 with the importation of seedlings grown from seed of the Brazilian *Hevea*. The 33 seedlings received by Java in 1882 mark the beginning of the plantation rubber industry in the Netherlands Indies.

Experiments carried on in the next 25 years fell short of the desired results. The tapping methods were such that the trees yielded very little, which may account for the fact that as late as 1905 the total area in the Indies under *Hevea* was only 3,300 acres. Only after years of experimentation, in which the government took an active part, were methods of cultivation improved to a point where the value of the *Hevea* tree as compared with other varieties became indisputable. Once this value was achieved, and with the demand for rubber constantly growing, its cultivation became the leading plantation industry of the Indies.

Rubber is grown in both Java and the Outer Provinces, chiefly in Sumatra. In Java, rubber trees are grown at an elevation of about 300 to 1,500 feet above sea level - rarely lower or higher. In Sumatra, on the other hand, most of the rubber estates are found at a height of less than 300 feet. The difference in elevation is due to the fact that large areas of the sparsely populated lowlands of Sumatra are still covered with primeval forest of little economic value, which can be cleared for extensive plantations, whereas in Java almost all lowlands are already in use.

Rubber production in the Netherlands Indies, as of a number of other export crops, is of two kinds: plantation and native. Suitable soil, good climatic conditions, and the availability of a sufficient labor supply are some of the principal prerequisites of each. On the other hand, the two kinds differ considerably in a number of important instances; therefore, they will be treated separately here.



Figure 5.-A rubber estate in the Netherlands Indies.

*Plantation rubber:* The European rubber plantations are laid out in the form of gardens, with approximately 100 trees per acre. From 4 to 6 years are required for a tree to mature, and from 8 to 10 years for it to attain maximum productivity. The yield depends chiefly upon the age of the tree; and if the price of rubber is low,

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it is not profitable to tap it early. The plantation trees yield more rubber than the trees of native gardens. It has been noted that "Eight-year-old estate rubber would be considered to yield poorly were it to give an average of only 4 pounds per tree annually, while the native rubber of equal age with 375 trees per acre would average less than 2 pounds."³⁶ It makes a great difference whether the tree is grown from selected or unselected seedlings. In the first instance the yield from a 12-year-old tree ranges from 9 to 30 pounds and averages about 16 pounds; in the second the yield from a tree between the ages of 15 to 25 years varies from 2 to more than 30 pounds, and averages about 5 pounds.³⁷

TABLE 4 - *Acreage and production of rubber in the Netherlands Indies
1938 with comparisons*

YEAR	PLANTATIONS	PLANTATION RUBBER				NATIVE RUBBER	
		ACREAGE		PRODUCTION	YIELD PER ACRE	PRODUCTION	PERCENT AGE OF TOTAL
		PLANTED	BEARING				
		1 000	1 000	Million		Million	
Average	Numbers	acres	acres	pounds	Pounds	pounds	Percent
1921 1925	849	957	633	181	284	88	32.7
1926 1930	1 025	1,274	862	313	363	206	39.6
1931	1,071	1,438	944	365	387	195	34.8
1932	1 072	1 439	980	332	339	135	30.0
1933	1 144	1 465	1,072	377	352	256	40.4
1934	1 186	1 486	1,230	422	343	410	49.2
1935	1,178	1,471	1,282	341	266	319	48.3
Average							
1931 1935	1,130	1,459	1,101	367	336	263	41.7
1936	1 190	1,473	1,328	356	268	334	48.4
1937	1,197	1,467	1,321	540	409	460	46.0
1938	1,202	1,472	1,308	386	295	323	45.5
Average							
1936 1938	1,196	1,471	1,319	427	324	371	46.4

Compiled from official sources

The Government of the Netherlands Indies first planted rubber on its estates in 1900, and private planters after 1905. Once started, expansion proceeded uninterruptedly, even when prices were low, though at such times new acreage would be added more slowly. In 1906 the area planted amounted to 31,000 acres; 4 years later the figure had increased to 258,000 acres. By 1914 the acreage had reached 591,000 acres, and another 230,000 acres were added by 1920. Table 4 shows the progress since then in terms of both planted and bearing acreage. Expansion was still rapid during the 1920's but the all-time low prices of the early 1930's made further addition of new land unprofitable. In 1932 and 1933 rubber sold for as little as 3 cents a pound.

³⁶ Taylor, V. A., and Stephens, John. *Native Rubber in the Dutch East Indies*. report to the Rubber Growers Association. London, 1929. p. 6.

³⁷ Rao, George. "The Statistics of the Rubber Industry," *Journ. of the Royal Statist. Soc.* v. C1 part II, 1938, p. 329.

The restriction scheme to which the Netherlands Indies became a party in 1934 prevented expansion even if prices should recover. That there are ample land reserves to increase planting if necessary is illustrated by the fact that in 1938 the area controlled by the rubber plantations was around 4 million acres, with only 1,471,000 acres actually planted.

Since planting on a large scale began only after 1905, production did not increase significantly till 1913. In that year output amounted to 15 million pounds; in 1915 it jumped to 44 million pounds. The four 5-year averages and the data for 1930-1938 (table 4) show how rapidly production mounted. The output in 1931-1935, estimated at 367 million pounds, was almost 3 times that of 1916-1920. In 1936-1938 production of plantation rubber in the Netherlands Indies attained a volume of 427 million pounds. The bearing acreage has remained unchanged since 1936 as a consequence of the restriction measures.

Production increased not only because of the expansion in bearing acreage, but also because of the increase in yield per acre, particularly through the 1920's. This may be attributed to the fact that science has determined the development of plantation rubber since its inception. This distinguishes it from the wild rubber industry. Of the reckless, haphazard, "get-rich-quick" schemes characterizing rubber production in Brazil and Africa, there is hardly a trace in the Netherlands Indies. Basic scientific work first undertaken by the government has been carried on ever since, concentrated in the fields of selection of seeds, bud-grafting, soil conservation, and fertilizing.

In 1938 there were 1,196 plantations engaged in rubber growing. Of these, 690, or 58 percent, cultivated rubber exclusively; 258 plantations, or 21 percent of the total, grew principally rubber and small volumes of coffee and tea. On the remaining plantations the importance of rubber as a crop is not so great; it competes with a number of other crops. Altogether in the years 1934-1938 rubber plantations planted an annual average of 368,000 acres to crops other than rubber.

TABLE 5.—Investments in the Netherlands Indies rubber industry by countries.
1925 and 1929

COUNTRY	CAPITAL INVESTED			
	1925	PERCENTAGE OF TOTAL	1929	PERCENTAGE OF TOTAL
	: Million : dollars	: Percent	: Million : dollars	: Percent
Netherlands	68	: 35.5	117	: 46.2
Great Britain	78	: 40.6	78	: 30.8
France and Belgium	21	: 11.0	27	: 10.7
United States	11	: 5.7	21	: 8.3
Germany, Scandinavia, and Switzerland ..	7	: 3.6	5	: 2.0
Japan	7	: 3.6	5	: 2.0
Total	192	: 100.0	253	: 100.0
	:	:	:	:

The building up of the plantation rubber industry called for a large capital investment; the demand for rubber was so great, however, and profits so considerable that capital was attracted without difficulty. It came from a variety of sources, which explains the international character of this large-scale agricultural enterprise. In 1913 investments were estimated at 104 million dollars, increasing to 192 million in 1925 and to 253 million in 1929.

Table 5 shows the composition of the investments for the years 1925 and 1929. The share of Dutch and American capital has increased in both volume and percentage of total capital invested. On the other hand, the share of British, German and Japanese capital has declined. On the whole, Dutch and British capital dominate the industry. In 1929 Dutch capital accounted for 46.4 percent of the total and British for 30.7 percent. Data concerning the distribution of plantations by nationalities show that at the end of 1936 Americans had a total of 133,000 acres of rubber, or 7.5 percent of the total.

Native rubber Encouraged by the success of the European-owned plantations, the natives started planting the *Hevea* variety, chiefly in Sumatra and Borneo. The Europeans were the first to develop the industry, and by planting a much larger area made a more advantageous use of the first peak period than did the native growers; but the native industry was not slow in catching up. As in the case of the plantations, the periods of greatest development coincided with those of highest prices.

Native rubber holdings, unlike European rubber plantations, are, with few exceptions, very small in size. Some natives plant not more than a few dozen trees. Reliable data concerning the native area planted in the Outer Provinces were obtained for the first time in 1936, when a census was taken of the rubber trees. The survey revealed a total of 788,438 holdings with a planted area of 1,683,000 acres, or slightly over 2 acres per holding. The area in production was estimated at 1,555,000 acres, which is over 200,000 acres larger than the production area of the rubber plantations. From a qualitative point of view the native tappable area is inferior to that of the plantations. Thus only 65,000 acres, or 4.3 percent of the entire acreage, are classified as "good" areas; 276,000 acres (17.8 percent) as "fairly good"; 627,000 acres (40.3 percent) as "mediocre"; 334,000 acres (21.5 percent) as "poor"; and 251,000 acres (16.1 percent) as "neglected" areas.

Despite the greatly varied quality of the native planted area, its total output is almost as great as that of the plantations - largely because the natives plant more than 3 times as many trees per acre (350) as do the former. In 1921 native production amounted to only 6,000 tons, or 8.8 percent of the total; but in subsequent years the rise was so rapid that in 1921-1925 native production averaged 40,118 tons, or 32.7 percent of all the rubber produced in the Netherlands Indies. The increase since then has been so rapid that at present native rubber accounts for nearly half of the total rubber production (see table 4).

Native rubber has become a strong competitor of plantation rubber; it has even been suggested that it may ultimately become the dominant element in the industry. The explanation lies in some of the features peculiar to native rubber cultivation.

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In the Outer Provinces rubber is a leading cash crop; the natives depend on it to pay taxes and to buy the articles they cannot produce themselves - hence the compelling reasons for expansion. Production of rubber in its present marketable form is well adapted to native cultivation. Having planted the seed, the native pays little attention to the trees until they reach the age of tapping.

Also noteworthy is the unstinting government aid in the development of native rubber production. In fact, the natives have received without expense the benefits of long years of rubber experimentation carried on by the government as well as by the European plantations. They have been aided by distribution of selected seeds by schools for tappers opened in some of the principal rubber districts, and in a number of other ways. The net result has been an increase in yield and in quality.

The effect of high prices has already been mentioned, but even low prices are not always a barrier against native plantings; certainly less than in the case of the European plantations. The following statement in this connection is significant:<sup>38</sup>

"The market price of native rubber is nearly all profit as there are no high overhead expenses. The European plantations must engage high salaried personnel expensive laboratories must be maintained large staffs of Directors in Europe and other countries are paid high salaries, the white personnel on the estates must be housed and cared for according to the European standard of living, and stock holders must be paid dividends. None of these items appear in the production of native rubber."

While the European rubber plantations are more economically exploited, the natives are in a much better position to tap the trees when prices prevail which would spell loss for the plantations; for the same reason they are able to expand production almost to the point of overtaking the plantation industry. This also explains why the native producers object strenuously to any scheme of restricting output.

Rubber growing is of great economic benefit to natives engaged in the industry. During the period of high prices rubber brought to many natives considerable wealth. Although this was not always utilized in a purposeful manner, yet in its wake came better housing, clothing, equipment, and means of communication. The decline in prices affected them less severely than it did the plantation owners; the natives still had most of their food crop to fall back on. On the other hand, for those natives who neglected their food crops in the years of high prices, adjustments following the price decline were of a more serious nature. Moreover, in periods of low prices the natives take little interest in proper maintenance of the trees.

#### OTHER COMMERCIAL CROPS

*Sugar* Sugarcane is one of the oldest, best known, and, until comparatively recently, most important export crops of the Netherlands Indies. Its production has had a profound effect on the economic development of Java, where the industry is concentrated. In 1929 capital invested in the sugar industry amounted to 318 million

<sup>38</sup> Foote, Walter A. American consul at Medan, in a report entitled "Agricultural Industries of North Sumatra," Sept. 14, 1929, p. 21.

dollars, or 33 percent of the total invested in all export crops. In 1920, when sugar prices were the highest on record, exports represented 50 percent of the value of all Netherlands Indies exports; in 1928, with prices considerably reduced, the share was still 24 percent of the total. Native wages and rental from the industry in the 1920's constituted about 9 percent of the total income of Java's population.<sup>39</sup> Progress was not so sensational as that of rubber, but in the course of less than a century (1840-1928) production was increased from about 47,000 tons to approximately 3 million tons, and the Islands became second only to Cuba as a producer of sugarcane.

With a few unimportant exceptions, sugarcane in Java is grown entirely on irrigated land leased from the natives, in the central and eastern districts of the island. Each crop is planted in rotation with other crops in such a way that the same ground is occupied by the cane once every 3 years. The area of an estate, therefore, is at least 3 times larger than the planted acreage in a given year. Cane is planted from April to the end of July and is harvested the following year from May to October, the average age at harvest being about 13 or 14 months. The land is usually fertilized with sulphate of ammonia. As a result of research at the experiment station at Pasoeroean, a type of cane known as P.O.J. 2873 was evolved that produces a higher yield and is immune to practically all cane diseases.

TABLE 6.--*Acreage and production of sugar in the Netherlands Indies.*  
*average 1921-1925; 1930-1938*

| YEAR      | PLANTATIONS | ACREAGE | PRODUCTION         |                   |           |                   |
|-----------|-------------|---------|--------------------|-------------------|-----------|-------------------|
|           |             |         | CRUSHED CANE       |                   | RAW SUGAR |                   |
|           |             |         | TOTAL <sup>1</sup> | YIELD<br>PER ACRE | TOTAL     | YIELD<br>PER ACRE |
|           |             | 1,000   | 1,000              |                   | 1,000     |                   |
|           | Numbers     | acres   | tons               | Tons              | tons      | Tons              |
| Average.  |             |         |                    |                   |           |                   |
| 1921-1925 | 210         | 410     | -                  | -                 | 2,049     | 5.0               |
| 1930      | 195         | 489     | 28,422             | 58.1              | 3,214     | 6.6               |
| 1931      | 194         | 496     | 29,066             | 58.6              | 3,056     | 6.2               |
| 1932      | 180         | 410     | 24,658             | 60.1              | 2,822     | 6.9               |
| 1933      | 122         | 208     | 12,690             | 61.0              | 1,513     | 7.3               |
| 1934      | 70          | 84      | 5,653              | 67.4              | 701       | 8.3               |
| 1935      | 46          | 68      | 4,526              | 66.6              | 562       | 8.3               |
| 1936      | 47          | 88      | 5,206              | 59.2              | 633       | 7.2               |
| 1937      | 98          | 209     | 13,320             | 63.7              | 1,521     | 7.3               |
| 1938      | 99          | 210     | 13,090             | 62.3              | 1,516     | 7.2               |
|           |             |         |                    |                   |           |                   |

<sup>1</sup> Includes small quantities of purchased cane.

Compiled from official sources

Sugarcane acreage expanded during the nineteenth century, but it was only after the economic reforms of 1870, when government cultivation ceased and the industry reverted to private hands, that the major development occurred. Between 1840 and

<sup>39</sup> Groth, Edward M. American Consul at Soerabaja, in a report entitled "The Sugar Industry of Java," Feb. 8, 1929.

1870 acreage increased from 78,000 to 95,000 acres; in the next 30 years it more than doubled; and at the end of the third decade of the present century it had almost reached the half-million mark. In 1930, 3 years before the sugar industry of Java was wrecked almost beyond repair, there were 195 plantations cultivating 489,000 acres, or an average of 2,500 acres per plantation. Thus even at the industry's peak of prosperity acreage represented only 2 percent of the total cultivated area of Java and Madoera and only 6 percent of that of the irrigated rice fields. In most sugar-producing countries growing of cane and manufacture of sugar are under separate control, Java, however, is an exception, since the natives are not able to maintain the highly scientific standards of cultivation required by the Dutch. Only 16 of the 195 plantations had no sugar mills of their own.

Production in Java during 1900-1930 almost trebled, and acreage more than doubled (see table 6). The explanation lies in the remarkable increase in yield and improvement in quality, resulting in a higher percentage of sugar. In 1895 yield per acre was 3.3 tons; in 1921-1925 it averaged 5 tons; and in 1934-1938 7.9 tons. Thus during a period of 18 years the yield increased by 54 percent. On the whole, prior to the recent depression Java produced approximately 15 percent of the world cane output and from 10 to 12 percent of the world cane and beet production.

*Tobacco* The Netherlands Indies has for many years ranked among the leading tobacco-producing and -exporting countries of the world. As a producer, it ranks after the United States, India, China, and Soviet Russia. As an exporter the Islands are outstripped only by the United States. During the years before and immediately after the World War, more than half the total output was exported. In recent years the volume has been reduced to about 40 percent.

Tobacco cultivation in the Netherlands Indies is famous for the high quality of certain types of *plantation tobacco* perhaps the finest in the world. The history of the tobacco plantations is long and complicated, but it may be stated that their real development began only in the second half of the nineteenth century. The large estates are concentrated in the Vorstenlanden and Besoeki districts of Java and in Deli on the east coast of Sumatra. In Sumatra tobacco cultivation reached its highest development. A review of its principal features applies to a large extent to estate tobacco throughout the East Indies, at the same time typifying the differences between native and plantation cultivation.

According to a study of tobacco production and consumption in the Indies:<sup>40</sup>

"There are probably few places in the world suited for producing leaf with characteristics and quality similar to Sumatra wrapper and there are few places where greater care and scientific research is followed in tobacco growing. Production has always been in the hands of a few large well-financed companies which have employed highly trained production managers. In addition the companies have maintained a research organization and experiment station which serve the entire district. The companies also maintain overhead associations, one in the Netherlands and one in Sumatra, which devote their entire time to economic investigations and give advice regarding production costs, labor supply, market output, and probable demand for various qualities of the leaf."

40 Gibbs, J. Barnard. "Tobacco Production and Consumption in the Netherlands Indies." U. S. Dept. Agr. Office of Foreign Agricultural Relations. F. S. 81, Mar. 1940, p. 11

In 1938 there were 87 tobacco plantations in the Netherlands Indies, of which 47 were in Sumatra and the remainder in Java. The number of plantations is not synonymous with the number of owners. In Sumatra, for instance, 7 companies control the 47 estates; of these, 4 companies control about 95 percent of the total output. In Java all the plantations are controlled by 8 companies, of which 2 produce about two-thirds of the crop. The total acreage of tobacco grown by the separate companies ranges from 200 acres by the smallest to more than 15,000 acres. Some companies grow rubber or other plantation crops, but as a rule tobacco is the major crop.

In Sumatra only one-eighth of an estate is cultivated at a time. After a tobacco and a rice crop, that follows immediately, are harvested, the land is usually allowed to grow back to jungle and is not used for 7 years, adding greatly to the quality of the leaf. The land of the tobacco plantations in Java is cultivated once in 2 or 3 years.

The harvested area of plantation tobacco in the Netherlands Indies increased from 109,000 acres in 1920 to 134,000 acres in 1931, but since that time planters' associations have reduced acreage in order to maintain prices. As a result the average acreage during 1935-1938 was only 97,000 acres and production 80 million pounds. Sumatra production accounts for only slightly more than a third of the total produced by plantations, but it is the most valuable East Indian tobacco in international trade.

TABLE 7.-Acreage, production, and yield of plantation tobacco  
in the Netherlands Indies, 1938 with comparisons

| YEAR       | JAVA AND MADOERA         |                      |                | EAST COAST OF SUMATRA    |                      |                | TOTAL NETHERLANDS INDIES |                |
|------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------|
|            | HAR<br>VESTED<br>ACREAGE | YIELD<br>PER<br>ACRE | PRODUC<br>TION | HAR<br>VESTED<br>ACREAGE | YIELD<br>PER<br>ACRE | PRODUC<br>TION | ACREAGE                  | PRODUC<br>TION |
|            |                          |                      |                |                          |                      |                |                          |                |
|            |                          |                      | 1 000          |                          |                      | 1 000          |                          | 1 000          |
|            | Acres                    | Pounds               | pounds         | Acres                    | Pounds               | pounds         | Acres                    | pounds         |
| Average    |                          |                      |                |                          |                      |                |                          |                |
| 1920-1924  | 70,362                   | 677                  | 47,663         | 40,787                   | 803                  | 32,768         | 111,149                  | 80,432         |
| 1925-1929  | 69,153                   | 912                  | 63,036         | 49,047                   | 875                  | 42,938         | 118,200                  | 105,974        |
| 1930-1934  | 73,082                   | 800                  | 58,460         | 39,379                   | 864                  | 34,004         | 112,461                  | 92,464         |
| 1935 ..... | 58,538                   | 851                  | 49,828         | 28,461                   | 1,001                | 28,490         | 86,999                   | 78,318         |
| 1936 ..... | 64,266                   | 790                  | 50,780         | 30,677                   | 985                  | 30,229         | 94,943                   | 81,009         |
| 1937       | 72,566                   | 746                  | 54,119         | 32,155                   | 970                  | 31,202         | 104,721                  | 85,321         |
| 1938       | 71,187                   | 646                  | 46,000         | 32,686                   | 918                  | 30,000         | 103,873                  | 76,000         |
| Average:   |                          |                      |                |                          |                      |                |                          |                |
| 1935-1938  | 66,639                   | 758                  | 50,176         | 30,994                   | 967                  | 29,980         | 97,634                   | 80,162         |
|            |                          |                      |                |                          |                      |                |                          |                |

Compiled from data of the Agricultural Statistics Section of the Central Bureau of Statistics of the Netherlands Indies

Exports of tobacco from the Netherlands Indies consist chiefly of leaf, exports of tobacco products amounting to less than a million pounds during the 5 years ended 1938. Since 1909 exports have ranged from a minimum of 99 to a maximum of 302

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million pounds. In 1925 exports exceeded 200 million pounds, but the trend has since been reversed, and for the 5 years 1934-1938 an annual average of only 106 million pounds was exported. The value of all tobacco exports has declined with the reduction in volume and prices. In 1927 all native and estate tobacco exports, amounting to 116 million pounds, were valued at 46 million dollars (114 million guilders), whereas in 1938 the value of the export volume of 104 million pounds was only 21 million dollars (39 million guilders). The relative position of the tobacco exports in the total value of principal export crops has not changed: in 1927 and 1939 tobacco exports accounted for 9 percent of the total. On the other hand, tobacco fell to fifth place from its position as the third most important export crop.

Native tobacco is grown on the dry land of the hilly and mountainous country or as a secondary crop on the irrigated rice fields. In recent years about 40 percent of the crop has been produced on irrigated land. Some dry land of good quality can be cropped for 2 successive years, but as a general rule it must be allowed to rest after each year in which a crop of corn and a crop of tobacco have been produced. In the irrigated rice fields tobacco is grown as a secondary crop once every 2 or 3 years at most.

Total area and production of native tobacco in Java during the 5 years 1933-1937 are estimated to have averaged 359,000 acres and 150 million pounds annually. Most of the output consists of *kerf* or tobacco that is shredded in the process of curing. About 75 percent of the total output is consumed domestically, and the remainder exported. Yields are rather low compared with those of the large plantations. The natives take great care in cultivating their crop, but they are backward in use of the scientific methods employed by the estates, with the result that while native tobacco yields about 450 pounds per acre, estate tobacco yields from 1,000 to 1,500 pounds.

Coffee. Late in the seventeenth century coffee was already cultivated extensively; during the nineteenth century its cultivation was a government monopoly, forming one of the pillars supporting the structure of the "culture system." Nearly 90 percent of all the coffee produced in the Netherlands Indies is of the *Kobus* variety, which combines high productivity with resistance to leaf disease. East Java, Sumatra, and to a smaller degree Celebes are the principal producing regions. The hot and humid climate and the highly fertile soil of volcanic origin are well suited to the crop. Coffee grows best on properly drained land and requires a great deal of water. It is estimated that the requisite amount of rain is not less than 70 inches

Coffee is cultivated by Europeans and by natives, but for many years the latter have been producing more than half the crop. The acreage under native coffee is not known; the coffee area of the plantations has remained almost stationary in the past two decades. Total coffee production during 1929-1933 amounted to a minimum of 135 million pounds in 1930 and a maximum of 292 million pounds in 1932, and average annual production in 1929-1933 and 1934-1938 was 252 and 259 million pounds, respectively.

Coffee cultivation is still important in the agricultural economy of the East Indies; it ranks with the 7 most important crops, exceeded in importance by rubber,

tea, sugar, palm oil products, tobacco, and coconut products. Little remains, however, of its former preeminence, and the prospects for future development are not encouraging. Just as rubber cultivation in the Netherlands Indies and other regions of the Middle East supplanted Brazilian rubber, in the same manner Brazilian coffee has relegated coffee production in the Middle East into a relatively obscure position.

Tea Tea has been cultivated in the Netherlands Indies for more than a century. At present the Islands are the third largest producer and exporter of tea. Three-fourths of the crop is planted in Java and the remainder on the east coast of Sumatra. Plantations are found at heights of from 2,000 to 6,500 feet above sea level in regions where rainfall is plentiful and evenly distributed throughout the year. The number of bushes per acre ranges from 2,300 to 3,000. After the third or fourth year picking may begin; the economic life of a tea bush is normally 50 years.

Chinese varieties that predominated earlier have gradually been replaced by the Assam tea shrub, imported in 1873. This type yields a larger output and has won great popularity in the chief importing countries. Application of fertilizers, planting of legumes for green manuring, intensive earth tilling, and careful selection of planting material have all contributed to improvement of the crop.

Tea is essentially a plantation crop, although a considerable acreage has been planted by natives. In 1938, 337 plantations had in production an average of about 1,000 acres, yielding a total of 140 million pounds (see table 8). In the same year the natives harvested 162,000 acres. Figures on native output are not available, but it is known that native tea accounts for approximately one-fifth of the total volume exported from the Netherlands Indies. In the past decade tea production ranged from 157 to 179 million pounds, and exports from 142 to 174 million.

TABLE 8.-Acreage, production, and exports of tea in the Netherlands Indies.
1929-1938

| YEAR | PLANTATION TEA | | | | NATIVE
TEA | TOTAL
PRODUC-
TION | EXPORTS |
|------|-----------------|---------|----------------------|----------------|---------------|--------------------------|-----------|
| | PLANTA
TIONS | ACREAGE | | PRODUC
TION | | | |
| | | PLANTED | IN
PRODUC
TION | | | | |
| : | : | 1,000 | : 1 000 | : Million | : Million | : Million | : Million |
| : | Numbers | acres | : acres | : pounds | : pounds | : pounds | : pounds |
| 1929 | : 316 | : 298 | : 241 | : 132 | : 35 | : 167 | : 158 |
| 1930 | : 323 | : 314 | : 257 | : 125 | : 33 | : 158 | : 159 |
| 1931 | : 326 | : 315 | : 276 | : 144 | : 35 | : 179 | : 173 |
| 1932 | : 325 | : 335 | : 298 | : 151 | : 29 | : 180 | : 174 |
| 1933 | : 334 | : 341 | : 316 | : 138 | : 27 | : 165 | : 158 |
| 1934 | : 336 | : 341 | : 325 | : 130 | : 27 | : 157 | : 142 |
| 1935 | : 334 | : 341 | : 334 | : 128 | : 29 | : 157 | : 145 |
| 1936 | : 332 | : 343 | : 337 | : 137 | : 29 | : 166 | : 153 |
| 1937 | : 335 | : 343 | : 337 | : 136 | : 28 | : 164 | : 147 |
| 1938 | : 337 | : 342 | : 338 | : 140 | : 30 | : 179 | : 158 |
| : | : | : | : | : | : | : | : |

Compiled from official sources.



Figure 6.—First improved cinchona trees imported into Java 75 years ago stand behind the manager of this government plantation. In foreground are 2-year-old plants; in background, 7-year-old trees soon to be dug up and stripped of bark and roots. (Courtesy *Life Magazine*.)

Cinchona: Nearly 90 percent of the world's supply of cinchona bark, from which quinine is extracted, is produced in the Netherlands Indies. Among the country's chief export crops it occupies a relatively minor position; in the past decade it accounted for only 2 to 3 percent of the total value of exported crops. Its importance, however, cannot be measured in such terms; for obvious medicinal reasons cinchona has great significance not only for the region where it is grown but for the world at large.

Cinchona originated in South America, and until about 1880 Colombia, Ecuador, Peru, and Bolivia furnished most of the bark entering the world market; however, their supply was uncertain and soon became almost exhausted. In the middle of the nineteenth century, the British and Dutch governments decided to cultivate cinchona in their colonies. The first seeds and plants were brought to Java in 1854, and for about 20 years the government was the only producer. Private enterprise saw little future in large-scale production of cinchona bark of low quinine content and undertook production only when the government plantations succeeded in improving the quality of the bark.



Figure 7.-Cinchona bark being stripped from the tree and dried by placing in wooden trays exposed to the sun. (Courtesy *Life Magazine*.)

Ninety percent of cinchona cultivation is concentrated in Java, particularly in the mountains of western Java. It thrives best in alkaline soils; of great importance to the crop are improved seed material, proper manuring, and aids in resistance to diseases. The number of trees per acre ranges from 1,000 to 1,200. The bark of a tree from 4 to 5 years old is richest in quinine. The life of the cinchona is from 15 to 20 years. The total annual area in production during the past decade averaged 38,000 acres, and the number of plantations 116, or 327 acres per plantation. Production of dry bark varied from 17 to 25 million pounds, yield per acre from 425 to 684 pounds, and exports from 13 to 24 million pounds.

In addition to private plantation production, there is also one government-owned and operated plantation with an annual output of 1 to 2 million pounds. The quinine equivalent of the total bark exported in 1933 amounted to 1,473,000 pounds.

Coconuts: The Netherlands Indies is the world's largest producer of coconuts. Among the crops of the Islands the coconut plays an important role as both a food crop and an export product when converted into copra (the dried meat of the nut) and oil. Accurate information on coconut consumption is not available; estimates vary from 23 to 47 coconuts per person annually. In 1938 coconuts were the fourth most important export crop of the East Indies.

The coco palm grows throughout the Islands, but generally thrives best in low sections of well-drained soil in a climate where periods of drought are not prolonged. The life of a palm is approximately 100 years. Under normal circumstances the palm bears its first fruit in the seventh or eighth year and reaches full productivity in 10 to 15 years. Its cultivation requires no special effort, nor does the production of copra, which is dried in the sun, over fires, or in drying sheds.



Figure 8.-Drying of copra.

There are many coconut plantations under European management, but more than 95 percent of the crop is planted by natives. In 1933 the Netherlands Indies had 665 plantations, with a bearing area of 97,000 acres. The production in terms of copra amounted to 33,000 tons. Since native coconut holdings are scattered all over the Islands, and an enormous quantity is consumed on the farms, estimates of native production can be merely approximations. According to one source, native production in terms of copra amounted in 1936 to 1,155,000 tons,⁴¹ equivalent to 4,343,000 coconuts, or approximately 67 coconuts per person.

Exports of coconut products from the Netherlands Indies were of little importance prior to the World War, but they have increased enormously in subsequent years. The Netherlands Indies ranks next to the Philippines as an exporter, representing about 28 percent of the world export trade. In 1933 the Islands exported 650,000 tons (in terms of copra), compared with 740,000 tons from the Philippines. Practically the entire volume is shipped to the Netherlands and to central European countries.

Palm oil: Palm oil production is a relatively young but fast-growing plantation industry. The principal producing region is the east coast of Sumatra. The first plantation was laid out in 1914 and the first crop harvested in 1919. Since then acreage, production, and exports have increased rapidly, even during the depression years. The Netherlands Indies is second only to Africa as a producer of palm oil.

⁴¹ Clattenburg, Albert E., American Consul at Batavia, in a report entitled "A coconut fiber industry for the Netherlands Indies," Apr. 8, 1938.

TABLE 9.—Acreage, production, and exports of palm oil in the Netherlands Indies, 1929-1938

| YEAR | PLAN-TATIONS | ACREAGE
IN
PRODUCTION | PRODUCTION | | EXPORTS | | TOTAL EXPORTS
AS PERCENTAGE
OF WORLD TOTAL |
|------------|--------------|-----------------------------|------------|---------|---------|---------|--|
| | | | OIL | KERNELS | OIL | KERNELS | |
| | | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | |
| | Numbers | acres | pounds | pounds | pounds | pounds | Percent |
| 1929 | 48 | 58 | 79,301 | 15,071 | 79,094 | 15,071 | 5 |
| 1930 | 48 | 74 | 109,682 | 21,250 | 105,852 | 21,250 | 7 |
| 1931 | 51 | 90 | 142,102 | 26,896 | 135,334 | 26,896 | 10 |
| 1932 | 50 | 108 | 198,574 | 39,427 | 187,331 | 39,427 | 11 |
| 1933 | 50 | 124 | 247,253 | 50,926 | 256,314 | 50,926 | 15 |
| 1934 | 50 | 138 | 288,023 | 54,847 | 267,333 | 55,265 | 16 |
| 1935 | 60 | 154 | 325,474 | 67,493 | 315,678 | 67,509 | 16 |
| 1936 | 61 | 168 | 386,325 | 79,669 | 379,998 | 81,133 | 17 |
| 1937 | 63 | 173 | 438,918 | 92,208 | 434,073 | 91,426 | 19 |
| 1938 | 60 | 184 | 499,711 | 105,900 | 486,559 | 104,694 | 24 |

Compiled from official sources.



The tree is not indigenous to the Netherlands Indies, but was transplanted from Africa. In the course of time it evolved its own characteristics, and is now known as the Deli type.⁴² The soil and climate of Sumatra are well suited to the palm, which is planted in every section of the east coast at altitudes varying from 30 to 1,500 feet. Cultivation in the early stages is carried on in a scientific manner. The number of trees per acre is about 60. In general the first yield may be expected after 4 years. The average yield per acre of oil and of dry kernels ranges, depending on the age of the tree, from 450 to 2,000 pounds of oil and from 90 to 400 pounds of kernels.

In Africa, where most of the palm oil is produced, cultivation is largely by natives, but in the Netherlands Indies it is almost entirely by Europeans, on large-scale plantations with hired labor. In 1938 there were 60 plantations that had in bearing 134,000 acres (228,000 planted), or over 3,000 acres per plantation. Production of oil amounted to 500 million pounds, and of kernels 106 million pounds. In the crisis years prices fell sharply; in 1934,

for instance, they were only one-fifth of those of 1929. During the years 1929-1933, however, planted acreage increased by 55 percent, and acreage in production more than

⁴² *The Netherlands Indies*, Department of Economic Affairs, Batavia, Java, Aug. 1939, p. 20.

trebled. This expansion was due to the fact that the industry was still in a position to yield a profit and that world demand for palm oil was still increasing. The share of the Netherlands Indies in world exports of these products increased during 1929-1938 from 5 to 24 percent. The United States is the leading consumer of Sumatra palm oil products, taking in 1938 over 50 percent of the total exported volume.

Kapok: Kapok is a fiber obtained from the seed pods of the kapok tree. It has a cotton-like floss and is used largely in upholstery, mattresses, pillows, life preservers, etc. From an economic viewpoint it is the most important fiber produced in the Netherlands Indies. The central and eastern sections of Java are the chief producing regions, where conditions for its growth, such as fertile, well-percolating soil and a marked dry season, are favorable.

Approximately 90 percent of the total output is produced by natives and the other 10 percent by European plantations, where it is usually interplanted with coffee and cacao. The total output of seed kapok fiber in 1938 was estimated at 25,000 tons. Exports of fiber alone accounted for 64 percent of world kapok exports. The United States is the principal purchaser, taking half of the total exports in 1939.

EFFECT ON THE ISLANDS OF THE WORLD DEPRESSION

SITUATION BEFORE THE DEPRESSION

The rise of prosperity: For many years until the late 1920's the Netherlands Indies enjoyed continued economic progress. There were, of course, setbacks, such as that after the World War; but they were of short duration, and the Islands emerged well prepared to take advantage of any improvement in the demand for their exports. Higher prices, the ever-increasing demand for tropical products, the availability of extensive fertile regions in the Outer Provinces, and the mineral wealth for which there has always been a ready market made possible a steady advance until the early 1920's. The rapidity of this advance is illustrated by the trade figures in table 10.

TABLE 10.—Foreign trade of the Netherlands Indies, 1938 with comparisons

| YEAR | IMPORTS | EXPORTS | TOTAL |
|------------|-------------------------|-------------------------|-------------------------|
| | <i>Million guilders</i> | <i>Million guilders</i> | <i>Million guilders</i> |
| 1900 | 176.0 | 230.2 | 406.2 |
| 1905 | 196.2 | 292.1 | 488.3 |
| 1913 | 463.7 | 671.4 | 1,135.1 |
| 1920 | 1,225.0 | 2,228.1 | 3,453.1 |
| 1925 | 839.5 | 1,801.5 | 2,641.0 |
| 1927 | 902.2 | 1,644.4 | 2,546.6 |
| 1928 | 1,003.4 | 1,580.4 | 2,583.8 |
| 1929 | 1,108.2 | 1,446.4 | 2,554.6 |
| 1930 | 888.0 | 1,160.0 | 2,048.0 |
| 1931 | 592.5 | 749.4 | 1,341.9 |
| 1932 | 384.1 | 543.7 | 927.8 |
| 1933 | 329.4 | 470.3 | 799.7 |
| 1934 | 291.0 | 489.4 | 780.4 |
| 1935 | 277.6 | 447.4 | 725.0 |
| 1936 | 286.8 | 590.1 | 876.9 |
| 1937 | 498.3 | 992.2 | 1,490.5 |
| 1938 | 485.9 | 689.0 | 1,174.9 |

Compiled from official sources.

The high prices of a number of important products in 1920 account for the record value of exports in that year. But even excluding 1920, the rapid course of development still remains obvious. The figures show that between 1900-1928 the value of exports rose from 230 million to 1,580 million guilders, or sixfold; during the same period imports increased from 176 to 1,000 million guilders, or fivefold.

The fact that the economic strength of the Netherlands Indies depended chiefly upon exports was also its source of weakness. The following figures showing the share of the output of some of the most important commodities used domestically and exported illustrate the great dependence of the Archipelago upon exports.⁴³

| | DOMESTIC CONSUMPTION
Percent | EXPORTS
Percent |
|----------------------------------|---------------------------------|--------------------|
| Tin | - | 100 |
| Gasoline | 6-10 | 90-94 |
| Kerosene | 20-40 | 60-80 |
| Rubber | - | 100 |
| Tea | 10 | 90 |
| Sugar | 20 | 80 |
| Copra | 30 | 70 |
| Coffee | 30 | 70 |
| Cinchona | 12 | 80 |
| Leaf tobacco ⁴⁴ | 4 | 96 |

The decline: In a period of expanding world economy based on international division of labor and resources, the Netherlands Indies was in a position to enjoy its full benefits. It was likewise affected adversely when the world economy gave evidence of contracting, beginning with the world depression of the 1930's. The effect on the Islands was disastrous. It was not a matter of losing one particular market, or of suffering the consequences of a price decline in one commodity, as had occurred in the past; it was a decreasing demand for tropical products in all markets, accompanied by a simultaneous and enormous fall in prices of all commodities. Even tin, the most lucrative of all exports, followed the general decline.

The trade returns (table 10) show the full severity of the depression in which the Islands found themselves. The value of the export trade, on which their income and prosperity depend, dropped from 635 million dollars (1,580 million guilders) in 1928 to 243 million (470 million guilders) in 1933, or by 70 percent. The decrease in volume was only 12 percent. The decline was caused chiefly by an unprecedented fall in prices. Taking 1928 as 100, the index number of prices of 12 principal export commodities stood at 34 in 1933. At the same time the decline in prices of imported goods was less drastic; the index number in the same period was reduced to 51.

THE DEPRESSION

Causes A number of factors explain the decline. To begin with, there was overproduction, and the difficulty of dealing with it. For most of the plantation

⁴³ Van Gelderen, J. "The Recent Development of Economic Foreign Policy in the Netherlands East Indies." New York 1939 p. 8

⁴⁴ The data given refer to high grade estate tobacco only; of the total tobacco production in the Netherlands Indies, about 56 percent is retained for domestic consumption and 44 percent exported.

crops, many years elapse before they reach maturity. Rubber is a case in point. A considerable new acreage was planted in the early 1920's, when prices were very high; therefore, huge crops matured just when the demand for rubber was contracting. Secondly, changes occurred in the consumption of certain products. Another unfavorable factor was the emergence of bilateral trade and the rapid growth of economic nationalism, aiming at self-sufficiency irrespective of cost, by means of all sorts of trade barriers, including duties, quotas, and subsidies. The effect of this policy is well illustrated by the course of Javanese sugar exports in the early 1930's.

The crisis was accentuated by the country's almost total lack of an invisible foreign trade, such as earnings from foreign investments. On the contrary, a characteristic feature of the economy of the Islands (and of most colonies), is that a considerable share of the profits is drained away from them by foreign nonresident investors. The Netherlands Indies is therefore entirely dependent on its merchandise exports for the maintenance of its purchasing power. To the adverse factors should be added the maintenance of the gold standard, which almost all other countries dropped. Until September 1936, when the guilder was depreciated, the government relied upon deflation, or reduction of production costs, as one of the chief means of insuring the competitive position of its products in foreign markets. This method, however, fell short of its aim. Despite the sacrifices such a course entailed, the export commodities of the Netherlands Indies were more expensive than similar commodities offered by its competitors with depreciated currencies.

Results: The first reaction on the part of the producers was not an attempt to adjust output, wherever possible, to a shrinking demand; on the contrary, every effort was made to meet lower prices by increasing production and lowering cost. Full advantage was

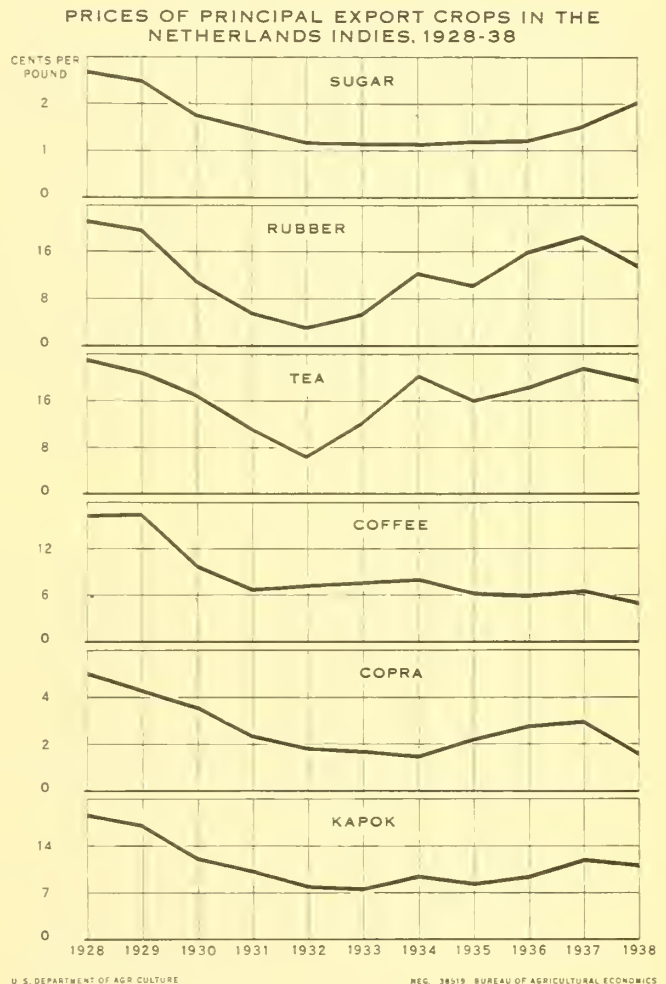


Figure 10.—Prices of principal Netherlands Indies export crops.

to meet lower prices by increasing production and lowering cost. Full advantage was

taken of agricultural research, with the result that rubber, sugar, and other commodities were produced at unheard-of prices. Greater production in the Indies and in other Eastern countries, however, only resulted further in accumulation of unsaleable stocks; and prices which it had been hoped had reached bottom fell still further.

Unprofitable prices affected adversely the whole population, although not to the same degree. For the plantation owners it meant the end of profits; even, to many of them, outright losses. To great numbers of Europeans and to still more native laborers it meant unemployment, with all its attendant privations. The native growers of the Outer Provinces, who were chiefly responsible for the total volume of native exports, were better able to bear the crisis because of the small amount of capital invested in their holdings and the possibility of shifting to the growing of foodstuffs for their own consumption. On the other hand, in Java the position of many natives who were almost entirely dependent on the production of food crops only became especially serious.

The economic crisis was reflected in the state of public finance of the Netherlands Indies. During the period 1929-1933 revenue declined by 46 and expenditures by 39 percent. Since the drastic retrenchment by the government was sufficient to make up for declining receipts, the deficits were covered by yearly increases in public debt, which rose by half a billion guilders between 1929 and 1933.

RECONSTRUCTION

SHIFT IN POLICY

Under the impact of these developments, which threatened the entire economic structure with disintegration, the government was compelled to discard its 60-year-old policy of free trade and the "open door." The significance of the shift from *laissez faire* that helped to make the Netherlands Indies an economic center of international importance cannot be overestimated; it marked the end of an epoch for the Islands. The year 1933 witnessed the beginning and the following years the consummation of a policy of extreme protectionism and government intervention in every aspect of the country's economic life.

In order to maintain this policy the government tried every possible weapon in the arsenal of commercial and industrial warfare. Restriction of output of some commodities and encouragement of output of others; import quotas; licensing systems; regulated state trading and barter deals; special clearing agreements with Germany, Italy, and Spain; international agreements on a number of products; devaluation of currency to stimulate export trade; imperial preference schemes through tariffs and quotas - all were attempted with a view to strengthening the economy of the Islands.

CONTROL OF IMPORTS

In 1933 the Government of the Netherlands Indies enacted the Crisis Import Ordinance, amended in 1935 and at present still in force. The provisions of the

Ordinance empower the government to control importation of any article. The purpose behind the measure is fourfold: first, to protect domestic industries; second, to favor imports from any country that may conclude a commercial agreement with the Netherlands Indies, and from the principal purchasers of East Indies products; third, to protect the interests of the existing import and distributing agencies; and fourth, to safeguard and encourage the trade between the Indies and the Netherlands, which declined in the early 1930's.

Although the Ordinance makes no mention of it, it is generally assumed that the immediate cause of its enactment was Japan's invasion of the Indies market, which began in earnest in 1931 after Japan went off the gold standard. Acting under the authority of the Import Ordinance, restrictions were applied to importation of beer, cement, rice, corn, and soybeans. In subsequent years the restrictions were extended to a great variety of goods. It should be noted that practically all types of textiles fall within the restriction categories. No shipment into the country is permitted without a license, which the importer must secure from the Director of Economic Affairs. The total import volume of a certain restricted product is apportioned among established importers by the Director.

Another and perhaps an even more outstanding example of the extent of government economic control is provided by the Industrial Control Ordinance of 1934. This Ordinance enables the government to regulate industry by virtue of its provision that no industrial undertaking may be founded or expanded without official permission.

CONTROL OF EXPORTS

Rubber. Since 1934 the Netherlands Indies rubber industry has become party to an international agreement for the regulation or restriction of output in order to obtain higher prices. Earlier restriction measures embodied in the *Stevenson Plan* (1922-1928), to which the Netherlands Indies was not a party, ended in failure.

The avowed purpose of this Plan was to stabilize prices at a certain level, but instead it raised them sharply in some years. The artificially high prices stimulated overproduction in non-British areas, particularly in the Netherlands Indies. The total world output during 1922-1927 increased from 455,000 to 684,000 tons, two-thirds of which must be attributed to the Netherlands Indies. The share of British rubber in the total world output declined from 67 percent in 1922 to 53 percent in 1927, whereas that of the East Indies increased from 26 to 40 percent. As long as the rubber producers of the Islands were not a party to the arrangement, there was no way of enforcing limitation of output and exports, the condition upon which the Plan was predicated. It defeated its own ends, and had to be abolished when it became obvious that the restriction scheme was benefiting competitors and doing British rubber interests more harm than good.

Shortly after the abandonment of the Stevenson Plan a new crop of restriction schemes was suggested. But as in the past, the attitude of Dutch producers and the Netherlands Government made an international agreement impossible. As a stronghold of free trade the Netherlands Indies for years opposed any control or artificial

regulation of any basic commodity produced in the Indies, until the economic disaster of the early 1930's overtook the Archipelago. But even if the rubber plantations could be persuaded to join the British in a restriction scheme, there remained the problem of the native rubber growers, who expanded their output enormously, produced it cheaply, and who did not see any gain in limiting their output. Furthermore, from a purely administrative point of view the task of enforcing a restriction plan upon some three-quarters of a million natives would have been difficult; hence the reluctance on the part of the government, which had been encouraging native rubber production, to urge an entirely new course of action.

These arguments were valid as long as the industry was showing a profit. With the onset of the depression, however, profits changed to losses. Even abandonment of low-production areas, reduction of European staffs and labor force, cutting of wages and salaries, maintenance of higher yields through better tapping practices, and other technical improvements in estate production, all failed to counteract the downward plunge of prices. Average annual prices declined from 27 cents a pound in 1929 to 13 cents in 1930, to 6 cents in 1931, and finally to an all-time low of 3 cents early in 1933. Under the impact of this price drop the Netherlands Government consented to join in a new international scheme for the control of the rubber output.

The *Agreement of May 7, 1934*, included the governments of France, the United Kingdom, India, the Netherlands, and Thailand (Siam), together responsible for 98 percent of the total world output. The object of the plan was to regulate the production and exportation of rubber in order to reduce existing stocks to a normal figure, to adjust supply and demand, and to maintain prices at a level reasonably remunerative to efficient producers.

The principal feature of the Agreement is the allocation of basic export quotas among the participants. Rubber shipments are prohibited unless they are accompanied by an official certificate of origin. A special tax of 1 penny per 100 pounds is collected on rubber exports, the proceeds to be devoted to research and advertising; planters' stocks must not exceed 20 percent of their production during the previous year, or twice the monthly permissible exportable amount. All other stocks in the contracting countries are limited to 12.5 percent of the annual export quotas in force. New planting is prohibited, except for experimental purposes, in which case it cannot exceed more than one-quarter of 1 percent of the total planted at the time of the Agreement. Replanting is permissible upon official authorization, but is limited to a maximum of 10 percent of an owner's total planted area in one control year or to a maximum of 20 percent during the life of the Agreement.

The Agreement expired on December 31, 1933, and the *Agreement of 1933-1943* was concluded. The objects are practically the same, although some important amendments have been added. The basic quotas have been revised upward. The share of the Netherlands Indies in the total standard quotas was increased from an average of 38 percent during the first restriction period to an average of 41.5 percent in the second. One of the most important changes relates to new planting: whereas under the old Agreement this was virtually prohibited, under the present one new planting up to 5 percent of the present acreage is permitted between January 1, 1939, and December 31, 1940. If it is deemed advisable, the Committee may permit additional planting.

A comparison of the 1934 and 1938 Agreements with the Stevenson Plan reveals several advantages over the latter. To begin with, practically all producing areas are included, and the supply of the world rubber market is entirely in the hands of the International Committee. A concession was made to rubber manufacturers by soliciting their views through the establishment of an Advisory Panel of Manufacturers. The price policy is elastic; it stipulates no fixed price, but expects an advance in price through the regulation of production and exports. The existing Agreement is more realistic in the matter of setting up quotas based not on past but on future production.

One of the chief difficulties of enforcing the scheme, particularly in its early period, was the regulation of the native rubber output in the Netherlands Indies. Yet to some extent the success of the Agreement depended upon it. The government at first decided that the total exports of native rubber in any given year of the Agreement (1934-1938) should not exceed 71.5 percent of those of plantation rubber. Secondly, since no individual quota could be fixed for each native producer, native output and exports were to be restricted by imposing an export tax, originally fixed at 3 pence per pound.

This system was not workable; the natives complained that the proportionate distribution of the total basic quota favored the plantations, and that they were not receiving the benefit of the prevailing market price, due to the export tax. Mindful of the difficult situation, the government instituted a number of measures to meet the demands of the native growers. First a census was taken of native holdings, enabling the introduction of a system of individual restrictions for the native producers beginning January 1, 1937. In this way the natives were ensured the full price for their rubber. Second - and perhaps the most important - the share of the native quota was increased so that at present it practically equals that of the plantation share.

From the point of view of the Netherlands Indies rubber producers, as well as of all those covered by the Agreement, developments in the industry have justified existence of the Agreement. The statistical history of the industry since 1934 bears this out. The Committee managed to keep rubber exports down to existing consumption, at the same time reducing world stocks. At the end of 1936 stocks amounted to 582,000 tons, compared with 850,000 tons in 1934. The 1936 stocks were considered normal, sufficient to meet the industry's requirements for 5 months. In 1939 they amounted to 378,000 tons, or only half of the 1934 volume. This reduction was accentuated by an increase in world consumption.

The purpose of the restriction scheme was to obtain a price for rubber "reasonably remunerative to efficient producers." Just what the price should be was not stated, but in the past 5 years prices have risen considerably above the low levels of the early 1930's, and have been sufficient to enable the industry to operate on a profitable basis. In March 1937 rubber was quoted at 25 cents a pound, and the United States Government protested against the disregard of the consumers' interests. Rubber prices, however, have not again reached the boom proportions of the middle 1920's; the average yearly price during 1935-1939 ranged from 13 to 19 cents a pound, or considerably below prices prevailing throughout most of the 1920's.

It is difficult to determine the extent to which prices were influenced by the restriction scheme and to what degree they were affected by the general rise in business activity in the latter half of the 1930's. It is clear, however, that by reducing stocks and keeping exports and consumption in line with the policies of the International Rubber Regulation Committee, an advance in price was inevitable.

Sugar. The history of the sugar industry in Java during the first three decades of this century was one of progress and prosperity. The very opposite is true of the industry in the 1930's, especially during the years 1933-1936 (see table 6). The number of plantations was reduced from 195 in 1930 to 46 in 1935; the crop area from 489,000 to 68,000 acres; and production declined from 3,214,000 to only 562,000 tons. The improvement in subsequent years was not sufficient to raise the industry to its former level; in 1938 Java produced not quite half the volume of sugar produced in 1930. In the face of expanding production and contracting markets, Java was unable to sell its sugar crop even at low prices. From 1926 prices declined: from 3.1 cents per pound in that year to 2.6 in 1928; to 1.7 in 1930; to 1.1 in 1932; and finally to a record low of 1 cent in 1934.

Under the influence of these developments, Java was confronted with the problem of adjusting its productive capacity or exports to a decreased demand. To achieve this object Java in 1931 joined the *Chadbourne Plan*, which included Cuba, Java, Germany, Czechoslovakia, Poland, Hungary, and Belgium. These countries accounted for about 40 percent of the world's sugar production and about 90 percent of the exports. The scheme aimed to raise the price of sugar by limiting production in each country to its current domestic requirements, plus a specified quota for exports.

In Java the government promulgated a number of decrees to facilitate the operation of the Chadbourne scheme, but to little avail. At the end of the first year of the Plan, despite lower production in the participating countries, world stocks had become larger, prices had fallen to lower levels, and international trade had declined. World production in the participating countries declined from an average of over 13 million tons for 1928-1929 and 1929-1930 to less than 10 million in 1931-1932. All this was largely offset by the nonparticipants, whose production increased from an average of about 17.3 million tons in 1928-1929 and 1929-1930 to over 19.5 million in 1931-1932.

It became apparent that Java's reductions in acreage and production had fallen short of the declining exports. Almost the entire crop of 1932 had to be stored. In view of exceptionally large stocks, the government believed it necessary to restrict production and exports far more stringently than was anticipated in the Agreement. Suggestions were even made that no sugar should be planted in 1934. These were rejected, but the 1935 harvested area of 68,000 acres, output of 562,000 tons, and price of 1 cent per pound, compared with 489,000 acres, 3,214,000 tons, and 1.7 cents in 1930, indicate very clearly the industry's plight. The one notable achievement was the reduction of stocks from a peak of 2,532,000 tons in 1933 to 800,000 in 1936.

The Chadbourne Agreement was not renewed in 1936; it was unable to prevent the race for sugar self-sufficiency in many countries formerly customers of the

participants. Yet the need of a new, more effective agreement was apparent. On May 7, 1937, twenty-one nations, controlling approximately 90 percent of world sugar production, signed a 5-year agreement known as the *International Sugar Convention*. The principal aim was a price for sugar that would include a reasonable profit for efficient producers. To carry out this provision of the Convention, quotas are assigned to each country exporting to the "free markets;" production is regulated so that stocks shall not exceed a maximum, which has been generally fixed at 25 percent of each country's annual production; and it provides that stocks shall not be less than 10 percent of the export quotas. The Netherlands was allotted an export quota of 1,100,000 tons, all of which was reserved for Java.

During the past 3 years exports from Java, by virtue of the quotas, have remained at about half the export and production capacity of the plantations prior to the depression. Sugar prices have reached a much higher level, so that those mills and plantations that have survived the crisis once again show a profit. It is clear, however, that the development of the world sugar industry in the past two decades has made it impossible for Java sugar to again attain its former place on the world market, or its former preeminent position in the economy of the Netherlands Indies.

Tea Tea, like a number of other crops destined chiefly for export, did not escape the results of the depression. In 1932 of a total of 67 tea companies operating in the Netherlands Indies, only 13 paid dividends. World tea production exceeded consumption by 20 percent, and prices reached an all-time low of 11 cents a pound. Restriction of output and control of exports in order to raise prices to a remunerative level came to be regarded as the only solution.

The 5-year *Agreement of 1933* was drawn up by the Netherlands Indies, India, and Ceylon, together accounting for 38 percent of world tea exports. The main provisions of the Agreement are:⁴⁵

"(1) The export of tea from the producing countries should be regulated in order to restore equilibrium between supply and demand. (2) The governments of the respective producing countries have to make regulations to prohibit exports in excess of the quotas agreed upon. (3) The standard on which regulation is based shall be determined by the maximum exports of each of the countries reached in any of the years 1929 1930 or 1931 (4) The percentage of the first restriction year will be 85 per cent of the standard export . . . (6) The existing tea areas shall not be extended during the period of the scheme, except in special cases. Under no circumstances shall such extensions exceed 1/2 per cent of the present total planted tea area of each country "

To implement this Agreement, the government in 1933 promulgated a number of measures embodied in the "Tea Export Ordinance," "Tea Planting Ordinance," and "Tea-seed Export Ordinance." In 1938, when the Agreement was renewed for another 5 years,⁴⁶ all these measures were combined in one "Tea Restriction Ordinance, 1938." The Director of Agriculture, Industry, and Commerce determines the standard production for each plantation. The Government General fixes the export quota, divided between estate and native tea in the proportion of nine to two. Exportation of tea

⁴⁵ Rothe, Cecile G. H., "Commodity Control in Netherlands India," *Commodity Control in the Pacific Area*, Stanford University Press, 1935, p. 288.

⁴⁶ Extended also to British East Africa and British Malaya.

not grown on an estate or factory to which a license has been issued is forbidden. Mindful of the interests of the native tea growers, the Ordinance empowers the Director to fix prices below which, under the threat of withdrawing their license, no plantation can buy it.

On the whole, the restriction scheme has worked to the advantage of the tea industry of the Islands. Production and exports have been kept within the desired limits, stocks have declined, and prices have been stabilized and have shown an upward trend, even though they are still much below those of the pre-crisis days. The fact that prices have not advanced further is ascribed partly to the policy of the International Committee of regulating prices so that they are not increased to a point where they might cause other countries to expand production.

The threat to the tea restriction scheme is from the nonparticipating countries, chiefly Japan and China. However, conditions in these two countries in recent years have not been especially conducive to expansion of tea production. The danger is one of the future and not of the present.

Coffee: The volume of coffee exports falls far below that of production, fluctuating widely from 135 million pounds in 1930 to a high in 1932 of 251 million pounds. In 1938 exports were valued at 14 million guilders, (7.7 million dollars), compared with 69 million (27.7 million dollars) in 1929. This was due not so much to the fact that the export volume in the latter year was 19 percent above that of 1938, but chiefly to the fact that the price of coffee in 1938 was but one-fourth of the 1929 price.

Government regulation of this crop began in 1933 with enactment of the *Coffee and Cocoa Crisis Ordinance* prohibiting coffee exports except under license, and requiring the planters to register with the Coffee and Cocoa Crisis Bureau, which was to administer the Act. Production of coffee was not restricted, nor were limits set on the total volume to be exported in a given year. The Ordinance was in effect until January 1, 1936, and later extended until January 1, 1941.

An important measure intended to strengthen the coffee industry is contained in the *Coffee Interests Ordinance of 1937*, providing for the establishment of a special Coffee Fund. Its purpose is to improve quality and increase consumption and sales abroad. Special mention is made of native coffee. The Coffee Fund is to conduct investigation into the trade in native coffee and to instruct natives in efficient business methods, contracts, credit, and organization. This is an important move, since it was the first attempt by the government to educate the natives in matters of which they were totally ignorant.

Cinchona. Cinchona was the first product of the Netherlands Indies subjected to regulation and restriction. Efforts in this direction date from the last decade of the nineteenth century, since even at that early date the industry suffered from overproduction and low prices. Thus the *Cinchona Agreement of 1913* was enacted. The main provision of the scheme was to limit the volume of exported bark to the volume of world quinine consumption through the allocation of supplies and the fixing of

prices of quinine. With some modifications, the Agreement was renewed in 1918, 1924, 1928, and 1932.

The Agreement succeeded in limiting exports and maintaining prices at a profitable level; in fact, at a level so high as to induce others to enter the field. Fear was expressed that high prices might hamper the fight against malaria; however, the Government of the Netherlands Indies took steps to prevent such an exigency. When it became party to the Agreement, the following provisions were included:⁴⁷

"1. The participants in the agreement undertake to endeavor as far as possible to supply quinine at special rates to areas especially in need of this drug

"2. The Government of the Netherlands Indies reserves to itself the right to withdraw in case it is of the opinion that the quinine agreement is becoming an impediment in the way of supplying quinine to malarial areas."

The Agreement failed, however, to put an end to overproduction. Cinchona bark output was approximately twice as large as consumption. Large, unsaleable stocks accumulated, and the industry found itself in a precarious situation. Some few producers who did not belong to the Association aggravated the condition. The government was obliged, therefore, to impose a strict control over the entire industry, as in the case of other export crops.

This was effected under the *Cinchona Plantation Ordinance*, the *Cinchona Export Ordinance* (February 1934), and the *Cinchona Restriction Law* (January 1937). The first prohibits extension of cinchona plantations; the second provides that cinchona may not be exported except under license from the Director of Agriculture, Industry, and Commerce. The government determines the volume to be exported in a given year; it may also raise the export quota in case prices are increased beyond a point determined by the government. Exports of cinchona seed and plant material are prohibited. The main provision of the third ordinance is the fixing of standard production for each plantation.

Kapok During the crisis years the export trade in kapok was adversely affected. While the volume of kapok exports was maintained during the depression, prices were very low; in 1935 the wholesale price was only slightly over one-third of that in 1929. This caused the government to add kapok to the list of products already regulated. In 1935 it enacted a *Kapok Interest Ordinance* with the view to increasing exports, raising prices by regulating exports, improving the organization of trade, and stimulating the consumption of kapok. A number of other regulations were issued, all with the view of carrying out the main objectives.

Exports are permitted only upon issuance of a government license. The volume in any year is determined by the government. To defray maintenance expenses, a small export fee is levied. Minimum prices are fixed by a specially created Kapok Control Board. Prices below which exporters cannot sell and prices they must pay the Chinese middlemen who purchase raw kapok from the natives are also specified.

⁴⁷ Kerbosch, M., "Some Notes on Cinchona Culture and the World Consumption of Quinine," *Bul. Colonial Inst. Amsterdam*, Dec. 1939.

Other crops Government control is not limited to the leading export crops. In 1937 it was found necessary to extend it to a number of export crops of lesser importance.

The products affected are cassava; *krossak* (native tobacco), the surplus of which is distributed among too few countries; so-called essential oils (citronella, oil of cloves, turpentine, etc.); and gums and resins. The laws pertaining to each product were passed on November 19, 1937, and became effective on January 1, 1938. Their provisions are identical; a review of the Cassava Ordinance will show the scope of the control by the government over agricultural production and trade.

The primary purpose of the legislation is as follows (*Article 4*):

- (1) To establish the standards to which the quality of cassava products must correspond when exported;
- (2) To assure a reasonable share in the returns from cassava products to producers and manufacturers;
- (3) To improve trade in cassava products;
- (4) To stimulate the use and sales of cassava products.

The newly-organized Central Bureau of Cassava Products will carry out the provisions. The exportation of cassava products without a written permit issued by the Director of the Bureau is forbidden; export licenses are issued only to exporters registered with the Bureau; shipments may take place only through ports agreed upon between the Director of the Bureau and Director of Finance of the Netherlands Indies; finally, costs of administration must not be charged to the budget of the government, but to the products, by levying a fee for the export permits.

Rice This principal native food crop is also subject to governmental regulation and control. Prices in the Netherlands Indies were greatly affected by imported rice from India and Indochina, and in 1931 and 1932 prices were only about 50 percent of the average for the years 1922-1929. The principal cause was the huge rice crops in those countries.

The government accordingly decided to protect native rice producers by assuring them an adequate market at reasonable prices. The measures enacted prohibited the importation of rice except under special licenses issued for a fee which was, in effect, an import duty. The volume to be imported is not fixed in advance, but is regulated in each district in accordance with its requirements. A Rice Import Commission is in charge of the work. The amount of the duty has changed since it was first imposed in 1933. The duty now in effect applies to certain specified areas in the Outer Provinces (the deficit rice areas), and ranges from 14 to 20 cents per 100 pounds.

Plans are also in operation to ship domestic rice from the surplus to the deficit areas. In addition, a system of bounties is employed in order to maintain a uniform price system throughout the Islands. As a result of these policies, surplus rice districts are in a position to sell rice to deficit areas, which until 1933 relied largely on foreign rice. This, together with the license duties, helps to hold imports to a minimum. Prices have been maintained at desired levels and are little influenced by prices on the international market.

Results of government intervention The consequences of this endless flow of legislation are difficult to evaluate, since the application of so many measures coincided with world economic recovery. It is safe to assume, however, that both the measures and world recovery contributed to improvement in economic conditions. It should be noted that "improvement" in the sense used here has no reference to the high level of the 1920's. The year 1928, for instance, when Java exported 2.8 million tons of sugar at 2.6 cents per pound is hardly to be repeated.

On the other hand, when the depressed conditions of the early 1930's are considered, the recovery is unmistakable. In most cases prices are still considerably below those of the 1920's, but above the level of the 1930's. The combined price index of 12 leading export commodities, taking 1927 as 100, recovered from a low of 24 in 1933 to 51 in 1937. Export value of agricultural products recovered from 306 million guilders in 1933 (153 million dollars) to 660 million guilders (363 million dollars) in 1937. Exports and prices again declined the following year, but on the whole were considerably higher than those of 1932-1935.

THE NETHERLANDS INDIES FOREIGN TRADE

From the account thus far, it is apparent that the Netherlands Indies lives by its foreign trade. The character of the export products has been described; imports consist of a great variety of articles, chief among which are textiles, accounting in recent years for one-third of the total import trade. The fact that foodstuffs are second in importance may seem surprising for so thoroughly agricultural a country. The natives do produce most of the food they consume, but some rice must be imported. The resident Europeans depend almost entirely on imported food, accounting thereby for nearly one-fifth of the imports. Machinery of all kinds, steel and iron products, automobiles, chemicals and drugs, and paper and paper articles are the other principal import items.

TABLE 11.—Percentage value of Netherlands Indies foreign trade,
1938 with comparisons

| DESTINATION OR ORIGIN | PERCENTAGE OF TOTAL VALUE | | | | | | | |
|------------------------|---------------------------|--------------------------|---------|---------|---------|---------|---------|---------|
| | AVERAGE
1909-
1913 | AVERAGE
1925-
1929 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 |
| | Percent | Percent | Percent | Percent | Percent | Percent | Percent | Percent |
| EXPORTS BY DESTINATION | | | | | | | | |
| Netherlands | 26.3 | 16.4 | 21.3 | 22.4 | 23.5 | 20.1 | 20.3 | 14.7 |
| Great Britain | - | - | 7.8 | 6.8 | 5.1 | 5.3 | 5.3 | 4.6 |
| United States | 3.3 | 13.5 | 11.4 | 14.2 | 17.6 | 18.6 | 13.5 | 19.7 |
| India | 13.0 | 13.5 | 3.2 | 3.0 | 0.7 | 0.6 | 0.8 | 3.2 |
| Singapore | 17.9 | 12.8 | 18.3 | 14.8 | 12.1 | 18.7 | 16.5 | 16.7 |
| Hongkong and China | 8.0 | 5.9 | 4.9 | 4.0 | 4.2 | 3.0 | 3.5 | 3.1 |
| Japan | 4.3 | 4.7 | 3.7 | 5.3 | 5.6 | 4.4 | 3.1 | 3.2 |
| Australia | - | - | 3.9 | 3.9 | 4.0 | 3.1 | 4.3 | 4.6 |
| Others | 27.2 | 33.2 | 25.5 | 25.6 | 27.2 | 26.2 | 32.7 | 30.2 |
| IMPORTS BY ORIGIN | | | | | | | | |
| Netherlands | 32.5 | 17.6 | 13.2 | 13.1 | 16.4 | 18.8 | 21.8 | 20.6 |
| Great Britain | 15.7 | 12.4 | 8.1 | 7.9 | 7.7 | 8.2 | 7.8 | 7.0 |
| Germany | 5.0 | 9.4 | 7.3 | 8.0 | 8.9 | 8.4 | 10.0 | 8.8 |
| United States | 1.8 | 9.7 | 6.1 | 6.8 | 7.6 | 10.0 | 12.4 | 13.6 |
| Singapore | 17.9 | 12.8 | 11.1 | 10.5 | 9.8 | 7.3 | 7.4 | 7.1 |
| Japan | 1.2 | 10.2 | 31.4 | 19.3 | 26.2 | 25.0 | 14.8 | 18.1 |
| Others | 25.9 | 27.9 | 22.8 | 34.4 | 23.4 | 22.3 | 25.8 | 24.8 |

Compiled from official sources.

Foreign Agriculture

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TABLE 12.—United States imports from Netherlands Indies of specified commodities <sup>1</sup>  
1929, 1932, and 1937-1939

| COMMODITY                                  | YEAR ENDED DECEMBER 31 |           |           |           |                   | 1939 AS<br>PERCENTAGE<br>OF TOTAL<br>IMPORTS |
|--------------------------------------------|------------------------|-----------|-----------|-----------|-------------------|----------------------------------------------|
|                                            | 1929                   | 1932      | 1937      | 1938      | 1939 <sup>2</sup> |                                              |
|                                            | : 1,000                | : 1,000   | : 1,000   | : 1,000   | : 1,000           |                                              |
|                                            | : pounds               | : pounds  | : pounds  | : pounds  | : pounds          | : Percent                                    |
| QUANTITY                                   | :                      | :         | :         | :         | :                 | :                                            |
| Rubber, crude .....                        | 203,358                | 59,023    | 343,174   | 246,132   | 320,366           | 28.6                                         |
| Tapioca .....                              | (3)                    | 119,304   | 422,183   | 224,149   | 354,542           | 92.6                                         |
| Tea .....                                  | 5,051                  | 9,666     | 18,734    | 20,639    | 28,276            | 28.9                                         |
| Coffee .....                               | 27,952                 | 58,208    | 51,119    | 13,741    | 7,070             | 0.4                                          |
| Palm oil .....                             | 45,030                 | 110,098   | 285,612   | 228,309   | 236,958           | 82.1                                         |
| Tin (in bars, blocks,<br>pigs, etc.) ..... | 607                    | 1,174     | 9,195     | 6,936     | 11,907            | 7.6                                          |
| Cinchona bark .....                        | —                      | 29        | 1,413     | 1,343     | 1,984             | 97.7                                         |
| Copra .....                                | 29,162                 | 152,073   | 17,328    | 126       | 10,762            | 2.5                                          |
| Pepper .....                               | 12,532                 | 28,211    | 31,095    | 53,963    | 73,656            | 97.7                                         |
| Tobacco, unmanufactured :                  | 3                      | 2         | 0         | 0         | 2,006             | 2.4                                          |
|                                            | : 1,000                | : 1,000   | : 1,000   | : 1,000   | : 1,000           |                                              |
|                                            | : tons                 | : tons    | : tons    | : tons    | : tons            |                                              |
| Sisal and henequen .....                   | 27                     | 31        | 39        | 25        | 37                | 31.1                                         |
| Kapok .....                                | 7                      | 8         | 11        | 5         | 8                 | 88.9                                         |
|                                            | :                      | :         | :         | :         | :                 | :                                            |
|                                            | : 1,000                | : 1,000   | : 1,000   | : 1,000   | : 1,000           |                                              |
|                                            | : dollars              | : dollars | : dollars | : dollars | : dollars         |                                              |
| VALUE                                      | :                      | :         | :         | :         | :                 | :                                            |
| Rubber, crude .....                        | 40,858                 | 5,813     | 64,709    | 35,699    | 52,125            | 29.2                                         |
| Tapioca .....                              | (3)                    | 1,748     | 7,835     | 3,715     | 4,897             | 88.7                                         |
| Tea .....                                  | 1,391                  | 837       | 4,250     | 4,412     | 5,709             | 27.1                                         |
| Coffee .....                               | 4,934                  | 4,348     | 3,234     | 1,033     | 650               | 0.5                                          |
| Palm oil .....                             | 3,254                  | 3,332     | 10,715    | 7,923     | 5,133             | 31.8                                         |
| Tin (in bars, blocks,<br>pigs, etc.) ..... | 293                    | 261       | 4,793     | 2,716     | 5,443             | 7.7                                          |
| Cinchona bark .....                        | —                      | 9         | 586       | 588       | 851               | 99.3                                         |
| Copra .....                                | 1,298                  | 2,804     | 618       | 6         | 208               | 3.1                                          |
| Pepper .....                               | 3,552                  | 2,452     | 1,645     | 2,739     | 3,132             | 96.0                                         |
| Tobacco, unmanufactured :                  | 4                      | 1         | 0         | 0         | 3,077             | 8.3                                          |
| Sisal and henequen .....                   | 5,020                  | 1,698     | 5,182     | 2,372     | 2,896             | 33.4                                         |
| Kapok .....                                | 2,725                  | 1,409     | 3,172     | 1,533     | 2,056             | 88.0                                         |
| Other .....                                | 18,972                 | 5,115     | 8,576     | 6,084     | 6,976             | 0.4                                          |
| Total .....                                | 82,301                 | 29,827    | 115,315   | 68,820    | 93,156            | 4.1                                          |
|                                            | :                      | :         | :         | :         | :                 | :                                            |

<sup>1</sup> General imports 1929 and 1932; other years, imports for consumption.<sup>2</sup> Preliminary.<sup>3</sup> Not available.

Compiled from official records of the Bureau of Foreign and Domestic Commerce.

## TRADE WITH THE UNITED STATES

Before the World War there was little direct trade between the United States and the Netherlands Indies; most of our imports came through Europe, chiefly from the Netherlands and Germany. The war established a more direct exchange of goods, and as a consequence of the increased demand for certain commodities, especially rubber, the trade expanded greatly, reaching a record high in 1920, with United States imports from the Islands amounting to 167 million dollars and exports to 59 million. In the following years the trade was continued on a somewhat reduced level. The depression affected it severely, however, as illustrated by the fact that in 1932 United States imports from the Netherlands Indies declined to 30 million dollars and exports to less than 8 million. There has since been rapid recovery, and in 1939 imports amounted to 93 million and exports to 35 million dollars.

Certain products the United States imports almost exclusively from the Netherlands Indies. Thus the latter furnished this country in 1939 with 98 percent of its cinchona bark imports, 98 percent of pepper, 89 percent of kapok, 93 percent of tapioca, and 82 percent of palm oil imports. United States imports of East Indian tobacco in 1939 amounted to 2 million pounds, or only 2.4 percent of total tobacco imports; however, because of the high quality of this tobacco its importance cannot be measured in terms of volume - this small amount accounted for 92 percent of all United States imports of leaf used for cigar wrappers. The volume of imports from the Netherlands Indies of such commodities as coffee, copra, and tin is small in comparison with the total imports of these products, representing in 1939 only 0.4, 2.5, and 7.6 percent of the respective totals. It should be noted that in the case of tin, imports have mounted very rapidly from 607,000 pounds in 1929 to 12 million in 1939.

Rubber is the principal United States import from the Netherlands Indies. In terms of value, it normally represents at least half of all United States imports from that region. In 1939 rubber imports amounted to 52 million dollars, compared with 98.6 million for rubber imported from British Malaya. These two countries account for nearly 151 million dollars' worth of rubber, or 84.5 percent of the value of total rubber imports. Despite the continued predominance of Malayan rubber, in the past two decades this country has come to rely on the Netherlands Indies for an increasing of its rubber consumption. In 1939 Netherlands Indies rubber made up 29 percent of total American rubber imports, compared with only 13 percent in 1920.

Significant as these imports are in the economy of the United States, they play an even more important role in the export trade of the Netherlands Indies. In 1939 the latter exported to the United States 43 percent of all its rubber exports, 25 percent of its tobacco, 50 percent of its tin, 45 percent of its kapok, 52 percent of its tapioca, 45 percent of its palm oil, 43 percent of its sisal, and 24 percent of its cinchona exports.

As a consumer of American products, the Netherlands Indies is of relatively minor importance. In 1939 United States exports to that region contributed only 1.1 percent of total exports; metals, machinery, automobiles, and aircraft accounted

for approximately three-fourths of the export value. With the exception of aircraft and parts and industrial machinery (5.3 and 7.8 percent, respectively, of total United States exports) the shares of all other items in the total United States export trade are very small. The place of the United States as a source of such products is of somewhat greater importance. In 1939 the United States furnished 30 percent of East Indian machinery imports, 16 percent of iron and steel products, 20 percent of chemicals, and 14 percent of paper and paper articles. On the whole, the United States is the third most important source of Netherlands Indies imports.

TABLE 13. *United States exports to Netherlands Indies of specified commodity groups, by value, 1929, 1932, and 1937-1939*

| COMMODITY GROUP                    | YEAR ENDED DECEMBER 31 |         |         |         |                   |
|------------------------------------|------------------------|---------|---------|---------|-------------------|
|                                    | 1929                   | 1932    | 1937    | 1938    | 1939 <sup>1</sup> |
|                                    | 1 000                  | 1 000   | 1 000   | 1 000   | 1 000             |
|                                    | dollars                | dollars | dollars | dollars | dollars           |
| Vegetable products, inedible,      | :                      | :       | :       | :       | :                 |
| except fibers and wood .....       | 5,652                  | 1,914   | 1,792   | 1,213   | 1,622             |
| Textile fibers and manufactures .. | 2,077                  | 347     | 846     | 585     | 1,201             |
| Nonmetallic minerals .....         | 3,951                  | 994     | 1,568   | 1,735   | 2,693             |
| Metals and manufactures, except    | :                      | :       | :       | :       | :                 |
| machinery and vehicles .....       | 7,294                  | 454     | 3,694   | 2,054   | 5,548             |
| Machinery and vehicles .....       | 18,283                 | 1,945   | 11,931  | 17,187  | 17,329            |
| Chemicals and related products ... | 3,382                  | 730     | 2,173   | 2,174   | 3,426             |
| Other .....                        | 5,004                  | 1,373   | 3,056   | 2,535   | 3,529             |
| Total .....                        | 45,643                 | 7,757   | 25,000  | 27,483  | 25,348            |
|                                    | :                      | :       | :       | :       | :                 |

<sup>1</sup> Preliminary. Compiled from official records of the Bureau of Foreign and Domestic Commerce.

In summarizing the trade relations between the two countries, mention should be made of their degree of mutual economic dependence. In view of the nature of the goods imported from the United States by the Netherlands Indies, it is evident that these commodities could be replaced from other sources. More complicated is the problem presented by United States imports of East Indian products: the Islands are among the most efficient producers of tropical products; normally, therefore, it is to our advantage to continue to secure such commodities in that market.

The question arises, however, as to whether the United States could secure similar products if this country were denied access to the East Indian market. The answer is that it could provided communication between the United States and British Malaya remains intact, and provided adjustments could be readily made with respect to both higher costs and utilization of synthetic products.

The Netherlands Indies enjoys a monopoly of the production of cinchona bark. If supplies from the East Indies were diminished, a synthetic product called "atebrin" might be used as a substitute. Opinions vary as to the efficacy of atebrin, but it has been used successfully in a number of cases of malaria. Tea, coffee, palm oil, wrapper leaf tobacco, and sisal are readily replaceable from other sources.

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The two really strategic products imported from the Netherlands Indies are rubber and tin. In this connection attention must again be called to the fact that in 1939 imports from the Indies contributed 29 and 8 percent, respectively, of the total imported. It would be relatively easy to cover the deficit by imports from British Malaya, the largest single producer of the two commodities. African and South American tin production could be expanded and utilized to a greater degree. It is possible that prices would be increased considerably, particularly in the case of rubber. The statement that "The Islands have been important more because of their effect on keeping prices down than because their production has been needed"<sup>48</sup> has an important bearing on this point. British Malaya as the sole important rubber source is likely to take advantage of its position, as it has on a previous occasion.

An entirely different situation would arise if exports from British Malaya were also diminished or entirely cut off. The likelihood of such a possibility cannot be disregarded, since it is logical to assume that the political fortunes of the Netherlands Indies are bound up with those of British Malaya. In such an event, the problem of finding new sources of rubber and tin would be serious indeed. Rubber reclamation, synthetic rubber production, cultivation of rubber in South America, and expansion of tin production in regions other than southeastern Asia would be necessary.

#### TRADE WITH JAPAN

In the 1930's Japanese trade competition became increasingly felt all over the world, particularly in Asia; the Netherlands Indies has not escaped its effects. The extent and increase of Japan's share in the East Indian import trade is shown in table 14. While imports from Japan after 1929 (with the exception of 1937) apparently have fallen off, Japan's share in the total import trade has advanced very rapidly. From 1925 to 1929 and 1932 to 1936 Japan's average annual share in the Islands' import trade increased from 10.2 to 27.2 percent; within the same period, Japan's share in their exports remained unchanged, or at 4.7 percent. The balance of trade is "unfavorable" in the extreme to the Netherlands Indies; Japan's purchases are normally not more than a third of its sales to the Islands.

Japanese penetration of the East Indian market has been most pronounced in the field of textiles, the most important group of imports into the Islands. In the early 1930's, "Chinese merchants," it was noted, "were importing Japanese cottons and the Dutch merchants found themselves compelled to import Japanese cotton or nothing."<sup>49</sup> The net effect was that Japan's share in the total volume of textiles imported by the East Indies increased from 36.4 percent in 1929 to 42.6 percent in 1939, to 64.7 in 1932, and to 83 percent in 1934. The latter figure represented 77 percent of the total value of the piece goods imports. Japanese trade expansion was not limited to textiles; it was "practically impossible to name any category of goods in which European and American industry could compete with that of Japan."<sup>50</sup>

<sup>48</sup> Newcomb, Robinson, "The United States and Southeast Asia's Strategic Products," *Far Eastern Survey*, Apr. 12, 1939, p. 92.

<sup>49</sup> Furnivall, J. S., *op. cit.*, pp. 431-432.

<sup>50</sup> *Ibid.*, p. 432.

TABLE 14. *Netherlands Indies trade with Japan. 1929-1939*

| YEAR           | IMPORTS FROM JAPAN       |                                | EXPORTS TO JAPAN         |                                |
|----------------|--------------------------|--------------------------------|--------------------------|--------------------------------|
|                | VALUE                    | PERCENTAGE OF<br>TOTAL IMPORTS | VALUE                    | PERCENTAGE OF<br>TOTAL EXPORTS |
|                | <i>Million guilders:</i> | <i>Per cent</i>                | <i>Million guilders:</i> | <i>Per cent</i>                |
| 1929 . . . . . | 114.8                    | 10.3                           | 47.9                     | 2.3                            |
| 1930 . . . . . | 109.1                    | 11.2                           | 46.2                     | 4.0                            |
| 1931 . . . . . | 92.5                     | 15.6                           | 33.0                     | 4.4                            |
| 1932 . . . . . | 75.3                     | 19.6                           | 22.8                     | 4.2                            |
| 1933 . . . . . | 97.1                     | 29.4                           | 21.6                     | 4.6                            |
| 1934 . . . . . | 91.4                     | 31.4                           | 18.4                     | 3.7                            |
| 1935 . . . . . | 81.1                     | 29.3                           | 23.9                     | 5.3                            |
| 1936 . . . . . | 75.0                     | 26.2                           | 30.0                     | 5.6                            |
| 1937 . . . . . | 124.4                    | 25.0                           | 42.3                     | 4.4                            |
| 1938 . . . . . | 71.8                     | 14.8                           | 20.6                     | 3.1                            |
| 1939 . . . . . | 85.0                     | 18.1                           | 24.4                     | 3.2                            |

Compiled from official sources.

Japan's rapid trade expansion created for the Government of the Netherlands Indies a very serious and complicated problem. On the one hand, the limited income of the native population called for low-priced goods supplied by the Japanese; moreover, Japan's low prices were in accord with the deflationary policy of the government, which meant low cost of living, low wages, and low prices. On the other hand, the Netherlands Indies viewed with misgiving Japan's monopoly of certain branches of its import trade. The replacement of free trade by arrangements based largely on principles of direct reciprocity placed the Netherlands Indies in a position where it could not permit Japanese expansion to the detriment of other countries, especially since the latter constituted the heaviest purchasers of East Indian products.

This was the background that induced the government to impose import restrictions on Japanese goods in order to defend its exports. The Crisis Import Ordinance of 1933, already described, laid the ground for the new policy. A limit is set to the total volume of imports, which in turn is distributed in accordance with a system of general and specified quotas. Imports of cheap Japanese goods were not prohibited, but a so-called "ceiling" was placed over them. At the same time the allotment of quotas by country enabled the government to secure an international exchange of "advantages," that is, ". . . a country will obtain a higher percentage of the Netherlands Indian import quota when it promises in return advantages for the sale of the Netherlands Indian products on its own market."<sup>51</sup>

Judging by subsequent trade returns, the attempt to end Japan's penetration of the market has been successful. The position of the Netherlands in this connection is of special importance in view of the fact that Japan's expansion was chiefly

<sup>51</sup> Rothe, Cecile G. H., *op. cit.*, p. 315.

at the expense of British and Dutch products. The Netherlands' share in the total value of imports declined to a low of 13 percent in the years 1934 and 1935, compared with 17.6 percent in 1925-1929. Since then, however, the share has gradually risen to 22 percent in 1938. Japan's share was reduced from 31.4 percent in 1934 to 25 percent in 1937, and finally to 18.1 percent in 1939. In yarn and piece goods the Japanese share declined to 51 percent of the total imports, compared with 83 percent in 1934. It should be emphasized, however, that the decline was only partly a result of the government restrictions. Japan lost ground in various groups of articles, particularly textiles, because of its decreased ability to compete, and because of shortages in its supply of raw materials - both due to the general economic difficulties experienced beginning with the invasion of China.

### SUMMARY AND CONCLUSIONS

Some outstanding features of the economic development of the Netherlands Indies may be recapitulated here. The wide choice of climate and rich volcanic soil permit the cultivation not only of home food crops, but also of a great variety of important tropical industrial products. The place of the Netherlands Indies among other producers of such commodities is important; in the case of 3 products it enjoys almost a monopoly. Thus the Islands furnish 90 percent of the total world supply of cinchona, 80 percent of pepper, and 75 percent of kapok; they also supply a third of the world's rubber, a third of copra, nearly 20 percent of tea, 25 of palm oil, and more than 20 of sisal. In addition, they furnish sizeable quantities of sugar, coffee, and numerous other commodities. The Islands are also important sources of oil and tin.

The agricultural economy of the Islands is characterized by its dual character of large plantations operated by Europeans and small 1- or 2-acre native farms. The plantations represent large capital investments and thorough utilization of agricultural science. These two elements, together with the fertile soil, abundant labor supply, and growing demand for tropical products, have enabled the enterprising Dutch to turn the Netherlands Indies into a country of typical plantation agriculture.

Unlike many another Asiatic country, the land reserves of the Netherlands Indies are not exhausted; however, a sharp distinction in this connection must be drawn between Java and the Outer Provinces. Java is one of the most densely populated countries in the world, and the possibilities of increasing the crop acreage of the island are practically at an end. Expansion of output can come only from increase in yield; it is generally agreed that in this respect a great deal may be accomplished.

The Outer Provinces, on the other hand, are sparsely populated, and the land under cultivation represents only a fraction of that available. To be sure, much of the soil is less fertile than that of Java, and irrigation is a prerequisite for the growing of food crops; but with considerable investment of capital, large tracts of land can be cleared and cultivated. This is actually being effected at the

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present, though on a small scale, through the government-sponsored and -directed colonization of southern Sumatra, Borneo, and Celebes, where large tracts of land are placed at the disposal of settlers from the most densely populated sections of central Java.

Colonial possessions are often referred to as the "white man's burden:" for the Netherlands, however, this burden has not been difficult to carry. In the process it has become one of the world's leading colonial powers - not so much because 8.5 million Dutch rule a colonial empire of 65 million persons, but because the Netherlands Indies, largely through development of its economic resources by the Dutch, has become one of the world's richest and best-paying colonial possessions.

At the turn of the century, when Dutch investments were estimated at less than a billion guilders, it was noted that "the welfare of the propertied classes in the Netherlands is very closely related to the retention of our colonies in East India."<sup>52</sup> Since then Dutch investment has almost trebled, and with it has grown the economic dependence upon the Indies of nearly every section of the population of the Netherlands. The number of Dutch whose economic welfare is directly or indirectly dependent on the colonies has been variously estimated at from 400,000 to more than 4 times that number.<sup>53</sup> The yearly profits from the colony have been estimated at about 160 million dollars.<sup>54</sup>

On the whole, it is clear that the East Indies place the Netherlands among the principal so-called "have" powers, as contrasted with the "have not" powers. Normally - that is, prior to the 1930's - such a position was beneficial to all concerned. Since the cost of production in the Netherlands Indies is relatively low, their exports have always been available at fair prices, and profits have been distributed in varying degrees among the mother country, the colony itself, and the consumers. But in a period of a rising European and Asiatic totalitarianism, the very existence of a rich but poorly armed colonial power such as the Netherlands becomes gravely endangered. Their militarily strong neighbors, who depend on imports of the commodities with which the Netherlands Indies is so richly endowed, are not content with access to the market on equal terms with other countries.

Having noted the importance of the Netherlands Indies to the Dutch in terms of material well-being, the question may be considered of the effects of Dutch rule on the economic welfare of the natives. The low standard of living of the native population of Java has already been discussed. It is questionable, however, whether the responsibility rests solely with the Dutch. Less emphasis on the colony as an exporter of raw products and an importer of finished goods, or a greater measure of industrialization, would have added to the income of the natives; hence the present policy of industrialization as a means of counteracting some of the ill effects of the economic crisis. The failure to act in this direction before the depression must be laid to the government.

<sup>52</sup> Vandenbosch, Amry, *op. cit.*, p. 209, quoting Van Deventer.

<sup>53</sup> *Ibid.*, and Keller, Arthur S., "Netherlands India as a Paying Proposition," *Far Eastern Survey*, Jan. 17, 1940.

<sup>54</sup> Vandenbosch, Amry, *op. cit.*

At the same time the importance of industrialization of the Netherlands Indies must not be exaggerated. Considering the natural resources of the Archipelago, it may be stated that industrialization could hardly affect its agricultural character. The natives of Java and, for that matter, of the other islands live by agriculture and are likely to continue to do so. The standard of living of the Javanese would be higher but for the fact that the island presents a problem of extremely dense population. This, perhaps, is at the root of the difficulty. On those islands in which this condition does not prevail, as in the Outer Provinces, the natives have facilities for bettering their economic status.

One of the cardinal policies of the Dutch colonial government has been that the native food supply must be as ample as possible. Because of the ever-increasing pressure on the land, per-capita consumption of rice has declined over several years by 15 percent. Yet even in the worst years of depression the natives knew nothing of hunger. One cannot but contrast the situation with that in Chosen, under the Japanese, where huge numbers of farmers are subject to "spring hunger" year after year.

The outstanding achievement of the Dutch colonial administration is that it has prevented the natives from bartering away their land. Hardly any other colonial power has insisted that this, the natives' only capital, must be preserved for them; hardly any other colonial power has succeeded so well in carrying out this principle. Considering the eagerness with which European entrepreneurs and Chinese and Arabian money lenders wished to obtain fertile native land, the Dutch achievement in this respect cannot be overestimated.

It may be argued that the European plantations occupy land that might have been cultivated by the natives; however, the acreage of State domain rented out to the plantations is too small, especially in Java, to make any appreciable difference in the size of the native individual holdings. When, as in the case of the sugar and tobacco plantations, the land is rented from the natives, they retain the use of it for cultivation of food crops and receive a fair rental set by the government. Finally, the absence of the tenancy system in the Islands is a phenomenon for which Dutch colonial land legislation is largely responsible.

The economic development of the Netherlands Indies is largely synonymous with the increasing volume of export crops, in which native agriculture has been playing an increasingly important part. The Dutch colonial government directly and the plantations indirectly have stimulated the cultivation of export crops by natives. The phenomenally rapid expansion of native rubber production to a point where it exceeds that of the plantations illustrates this point. While in the 1890's the natives contributed 10 percent of the total volume of export crops, this percentage has since risen to over 40 percent. It may be stated, then, that the natives, particularly of the Outer Provinces, are not only taking an active part and profiting in the economic development of the Islands, but may before long outstrip the plantations as a source of exports of tropical commodities.

Before the depression of the early 1930's exports from the Netherlands Indies were valued at over 600 million dollars: at the height of the crisis they declined

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to approximately one-third of that sum. The once flourishing plantation industry was hard hit, since foreign markets could no longer absorb the output of the Netherlands Indies at prices insuring the producers a margin of profit. The *laissez-faire* system of free trade and uncontrolled private business enterprise gave way to an extensively regulated capitalistic economy. With decreased dependence on foreign markets greater attention had to be devoted to the internal market and the development of industries based on domestic consumption. In a word, the new policy has been one of making the Islands into a more self-sufficient economic entity. For the time being, this has helped to prevent a collapse of the economic structure of the Netherlands Indies, but it may be questioned whether it could restore the Islands to their former prosperous state.

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